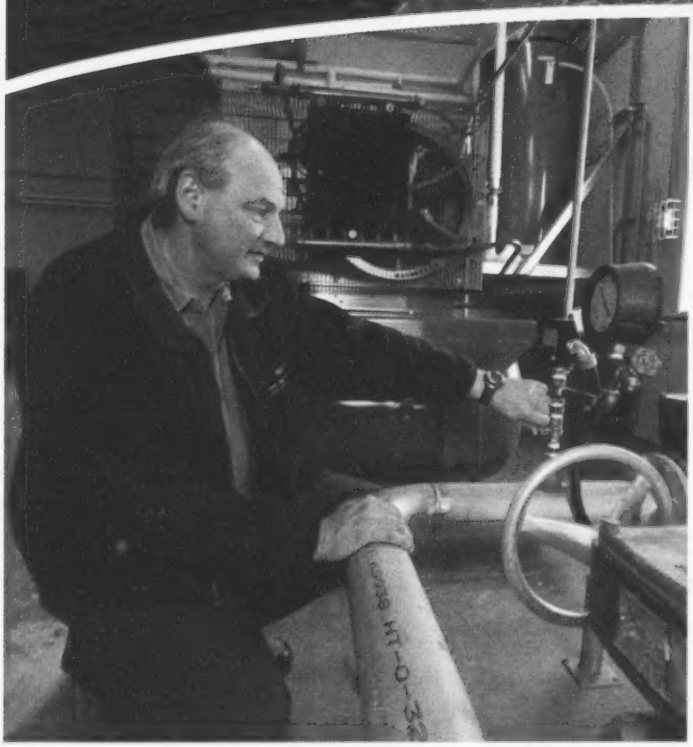
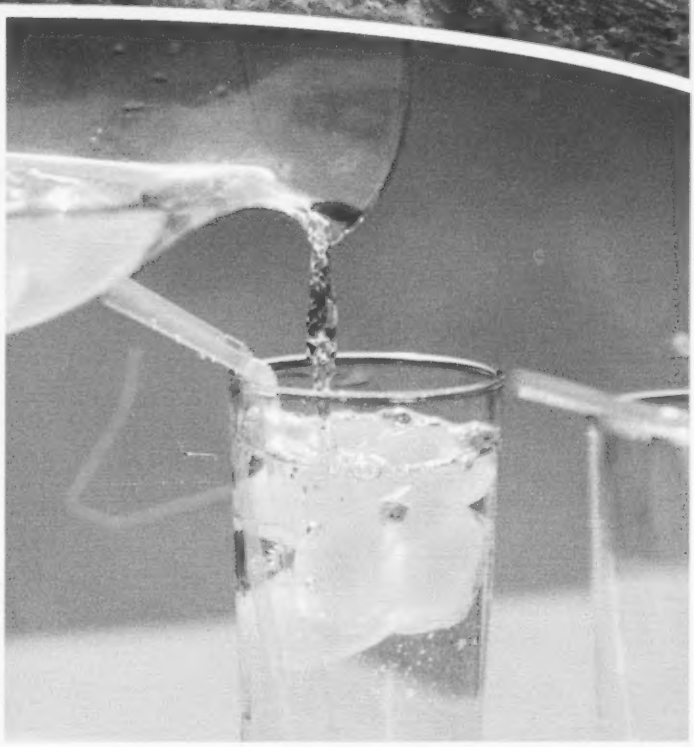
Annual Report 2009-2010

Chief Drinking Water Inspector





Ontario

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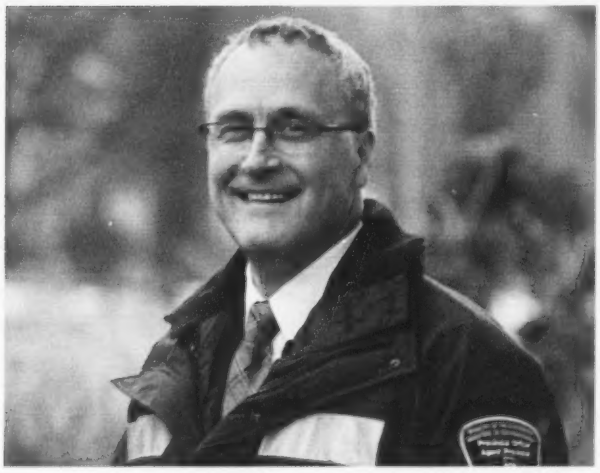
The 2009-2010 Chief Drinking Water Inspector's Report Appendices are published separately and are available on the Drinking Water Ontario website. The appendices include individual inspection ratings and drinking water quality results for municipal residential drinking water systems and details of orders and convictions for drinking water systems and licensed laboratories.

Message from the Chief Drinking Water Inspector



I am pleased to report, once again, that you can have confidence in the quality and safety of the drinking water provided by the systems we regulate. Ontario's drinking water continues to meet our strict standards, and the performance of our drinking water systems continues to improve.

The ministry and our partners share a common commitment to excellence, and this commitment is borne out by strong performance results. In 2009-10, more than 645,000 tests were conducted on samples from Ontario's drinking water systems. 99.88 per cent of results from municipal residential drinking water systems met Ontario's rigorous health-based standards. This is great news. We have seen strong drinking water quality results now for six consecutive years.

Dr. Arlene King, Ontario's Chief Medical Officer of Health, has also provided summary data on small drinking water systems regulated by the Ministry of Health and Long-Term Care.

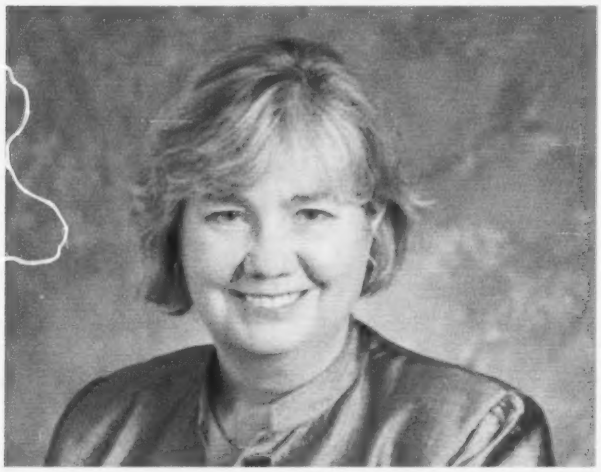
I am proud to say that our approach to protecting drinking water is earning recognition and interest from other areas of the world. For example, last fall, the province of Jiangsu, China, invited us to share source protection and environmental monitoring information about Ontario's drinking water.

I would like to take this opportunity to personally thank our many dedicated partners. Through our cooperative efforts, Ontario is a leading clean water jurisdiction in North America.

I encourage you to take the time to read the sixth annual report on drinking water — and learn more about what we are doing to make sure Ontarians enjoy safe drinking water.

John Stager
Chief Drinking Water Inspector

Message from the Chief Medical Officer of Health — Small Drinking Water Systems Program Update



I would like to take this opportunity to provide an update on the Ministry of Health and Long-Term Care's Small Drinking Water Systems Program. Oversight responsibility of Ontario's small drinking water systems was transferred to the Ministry of Health and Long-Term Care from the Ministry of the Environment on December 1, 2008.

Since the transfer took place, the Ministry of Health and Long-Term Care has undertaken a comprehensive and collaborative approach to implementing the program. Funding, training and resources have been provided to local health units to support its successful implementation. As we reach the half-way mark of the program's implementation, we will continue to support small drinking water system operators with their commitment to the provision of safe drinking water.

The program involves a new risk-based approach for regulating small drinking water systems. This approach sets specific requirements for each system to maintain safe drinking water. Specially trained public health inspectors, employed at local health units, carry out site-specific risk assessments and set the individual requirements for system operators to follow. This approach not only promotes collaboration between public health inspectors and system operators, but also provides an opportunity for raising awareness on the importance of safe drinking water.

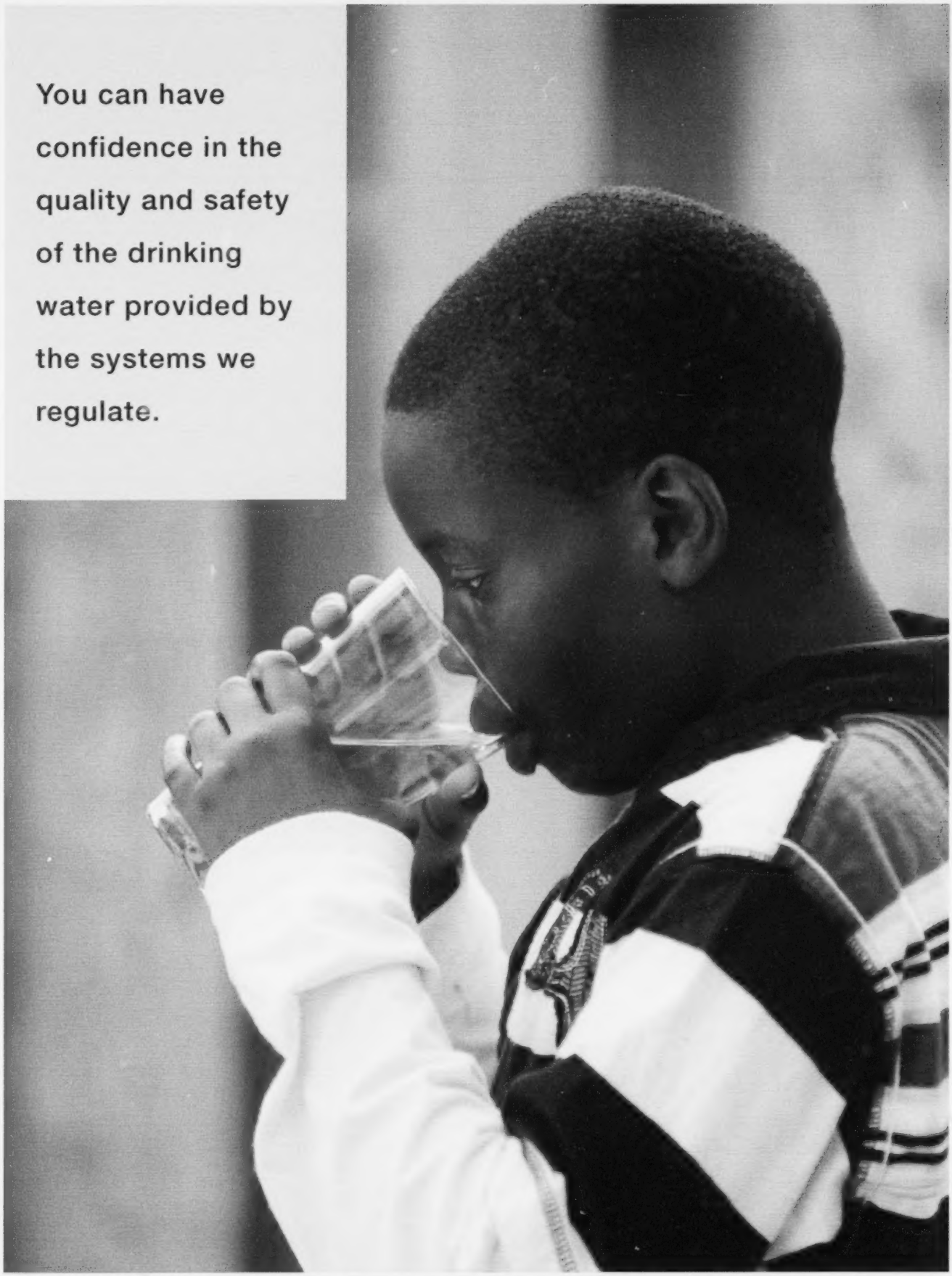
The Ministry of Health and Long-Term Care shares its commitment to excellence with the Ministry of the Environment and its partners by safeguarding drinking water sources and treatment systems across the province through effective partnerships with provincial and local public health officials.

I would like to take this opportunity to thank the local public boards of health and all of our drinking water partners for their efforts, continued support and commitment to ensure safe drinking water for all Ontarians and their families.

Arlene King, MD, MHSc, FRCPC
Chief Medical Officer of Health
Ministry of Health and Long-Term Care

For more information about the MOHLTC Small Drinking Water Systems Program, please see: www.health.gov.on.ca/english/public/program/pubhealth/safewater/safewater_resources.html.

You can have confidence in the quality and safety of the drinking water provided by the systems we regulate.



Having Confidence in Your Drinking Water

The ministry and all our partners remain dedicated to protecting your drinking water.

WHAT'S IN THIS REPORT

This is the Chief Drinking Water Inspector's sixth annual report.

In the first section of my report — **Having Confidence in Your Drinking Water** — you will find an overview of the actions the ministry and our partners have taken to protect Ontario's drinking water, highlighting our progress since my last report. We describe how we help ensure that the drinking water systems we regulate are delivering safe, high quality tap water to your homes, schools and businesses.

Throughout the first section, we have included profiles — **recognizing excellence** in drinking water protection.

In the second section of the report — Proven Performance Results — we provide detailed data on the quality of the drinking water, as well as the performance of drinking water systems and licensed and eligible laboratories from April 1, 2009 to March 31, 2010.

We invite you to read this annual report and discover how Ontario's drinking water is among the best protected in the world, based on independent jurisdictional assessments.

OUR SAFETY NET: Achieving Excellence in Drinking Water Protection

I can say with confidence that we have a world-class system to protect drinking water, which we call our safety net. It continues to earn your confidence, as well as recognition and interest from other areas of the world.

The safety net is an extensive network of safeguards that covers the drinking water system from the source to your tap (see **Figure 1**). You can find more information about the eight key elements of the drinking water safety net on the Drinking Water Ontario website.

Figure 1: The Drinking Water Safety Net

Ontario is recognized as a leader in providing safe drinking water. I am pleased to report that we continue to take action to strengthen the safety net framework. Below are some key achievements that demonstrate Ontario's progress in drinking water protection:

For 2009-10, 99.88 per cent of the drinking water tests reported by **municipal residential** drinking water systems met Ontario's rigorous, health-based standards. These systems serve more than 80 per cent of Ontario's population.

- Test results for lead from the drinking water systems — and the plumbing at schools and day nurseries — continue to demonstrate that the protective measures we have in place are working. Testing from schools and day nurseries found that 95.79 per cent of samples taken after the pipes had been flushed met the Ontario standard for lead, and 88.54 per cent of standing (non-flushed) samples met the standard, indicating that flushing is an effective way to reduce lead levels in drinking water.

Source protection planning is well underway. Communities across Ontario have developed science-based reports to identify threats to our drinking water sources. By the end of 2010, all 19 community source protection committees had submitted their assessment reports, identifying existing and potential risks to the quality and quantity of source water in their respective areas.

- By the end of 2010, 86 per cent of municipal drinking water system owners had received their final or draft drinking water licences. Ontario is the first jurisdiction in North America to mandate a quality management system for drinking water systems which requires all owners to utilize the best available practices and work to continuously improve their performance.

- In June 2010, the Walkerton Clean Water Centre's new permanent state-of-the-art facility was officially opened, with Justice O'Connor in attendance. Between commencing operations and December 31, 2010, this world-class facility had coordinated and delivered drinking water training to more than 26,400 course participants.

Ontario's leadership in drinking water protection continues to be recognized by other jurisdictions. For example, in October 2010 we were invited to the province of Jiangsu in China to share our expertise and lessons learned in developing Ontario's drinking water safety net and our provincial source protection and monitoring programs. We have also hosted a number of international delegations interested in our approach to protecting Ontario's drinking water.

There is no doubt that the past decade has been an important time in transforming drinking water protection in Ontario. I believe that we have built a framework that is highly effective, while also being adaptive to new science and innovative developments in technology.

Ontario's Drinking Water Expertise Valued by China

The province of Jiangsu, China, has made it very clear they consider Ontario a world leader in source protection. Last fall, the Jiangsu Environmental Protection Department hosted a delegation from Ontario to learn more about Ontario's drinking water safety net, source water protection and environmental monitoring programs. The mission built on the ongoing collaboration which was formalized in a Memorandum of Understanding on Environmental Cooperation in 2008.

"I was really impressed with [the province's] interest and their passion for learning more about Ontario. They see considerable benefits in Ontario being a partner with them," says John Stager, Chief Drinking Water Inspector, who led the group of Ontario water experts.

The delegation from Ontario, who were selected to provide a comprehensive perspective on Ontario's drinking water programs, also included Ian Smith and John Mayes of the Ministry of the Environment, Eric Hodgins of the Regional Municipality of Waterloo and Lorrie Minshall of the Grand River Conservation Authority.

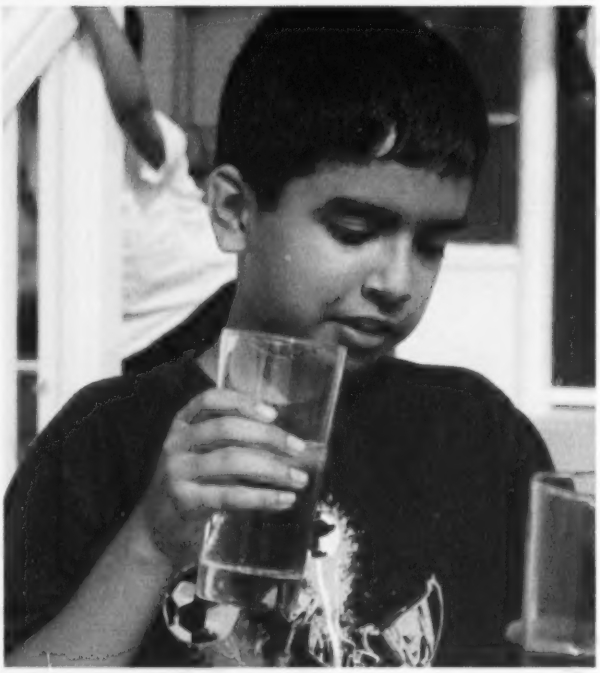
The delegation formally met their Jiangsu counterparts for technical exchanges on Ontario's source protection program and regional and municipal implementation programs in the context of the safety net.

When asked about the overall impression and outcomes of the trip, Stager reflects, "...Experiencing their culture and meeting face to face....I think went a long way in building and strengthening the partnership that we have with [the province of Jiangsu]," adding that the partnership "will continue to benefit both provinces."

Officials from the province of Jiangsu met with the delegation from Ontario.

PROTECTING YOUR DRINKING WATER SOURCES

In simple terms, the sources of drinking water are surface water — lakes and rivers — or groundwater (aquifers). For most Ontarians, this water is then pumped into a regulated drinking water treatment system where it is treated and samples are taken for testing at a licensed or eligible laboratory. The drinking water then goes through a network of pipes, known as a distribution system, to reach the tap in your home, business or school. For some of the population, drinking water can be provided through private or other types of smaller systems.



The bottom line is that protecting Ontario's drinking water sources — through our source protection program — is the first step in helping to ensure our drinking water is of the highest quality.

COMMUNITIES WORKING TOGETHER TO PROTECT THEIR MUNICIPAL WATER SOURCES

I am pleased to report that the ministry and our partners are making significant progress on enhancing the protection of Ontario's municipal drinking water sources. Our 19 locally based source protection committees, along with conservation authorities, are working hard on source protection planning across the province.

Under Ontario's Clean Water Act, each committee is required to prepare a science-based assessment report identifying the existing and future activities that pose risks to drinking water sources. They are also required to prepare a source protection plan that highlights actions to address the most significant risks, in order to protect both the quality and quantity of their drinking water sources. These reports and plans are developed locally, collaboratively and use sound science. The local authorities and committees have done a fantastic job of bringing together municipalities, businesses, the health sector, First Nations and local residents to achieve this.

It is encouraging to see that the committees have, as of December 31, 2010, prepared and submitted assessment reports for all of the 38 source protection areas. I am pleased to report that the ministry has already approved 3 of these reports as of the end of 2010.

Ultimately, the assessment reports will form the basis of the source protection plans which are to be submitted to the Minister of the Environment

by August 2012 for approval. You can access the assessment reports via links on Conservation Ontario's website.

Source protection planning is an important initiative and a key component of our drinking water safety net. We continue to provide support to the committees and authorities as they prepare their source protection plans, for example:

- In July 2010, O. Reg. 287/07 (General) was amended to set out requirements for the preparation and implementation of source protection plans under the Clean Water Act.
- We put together guidance to provide an overview of the regulation and outline what is required in these plans.
- In the fall of 2010 we held a number of training sessions to help the committees better understand the process of drafting protection plans.
- With the Ministry of Natural Resources, we funded 100 per cent of the planning costs.

Looking ahead, the assessment reports will also provide us with an important snapshot of how changes in the climate, for example drought, could potentially impact the quality and quantity of our drinking water.

With this in mind, the ministry is considering how drinking water source protection plans can include climate change adaptation measures to manage the impacts of climate change at a local level. We are also looking at how future assessment reports can include climate change information. For more details about drinking water source protection, go to www.ontario.ca/cleanwater.

Grand River Watershed Wastewater Optimization Pilot: a Source Protection Stewardship Project

In the Grand River watershed there are 30 wastewater treatment plants upstream of four drinking water intakes.

Wastewater management plants typically operate as separate entities, each one ensuring their treated out-flowing wastewater meets regulatory requirements. For the 30 wastewater treatment plants in the 13 municipalities along Ontario's Grand River, they are undertaking a very innovative partnership — they are working collectively to optimize their wastewater performance through a pilot project with the Grand River Conservation Area funded by the Ontario Drinking Water Stewardship Program.

"Our pilot is to engage, educate and create awareness among the wastewater community — what optimization is and what it could mean for their plants," says Sandra Cooke, Senior Water Quality Supervisor with the Grand River Conservation Authority. "It is also to create a community of wastewater operators."

"The target we're all going towards is high quality effluent coming out of the plants, not to just achieve compliance — it's not good enough anymore to just meet compliance," emphasises Cooke.

The Grand River Conservation Authority launched its wastewater optimization pilot project in the spring of 2010 with a series of workshops "to walk through the fundamental tools that are part of optimization," explains Cooke. Using a framework from the United States' Environmental Protection Agency, the conservation authority's three workshops focused on explaining the framework and the tools available to help operators assess their plants.

Cooke is more than happy to share information about the project, suggesting it might be of interest to other conservation authorities who want to bring together their wastewater managers and operators.

DELIVERING HIGH QUALITY TAP WATER

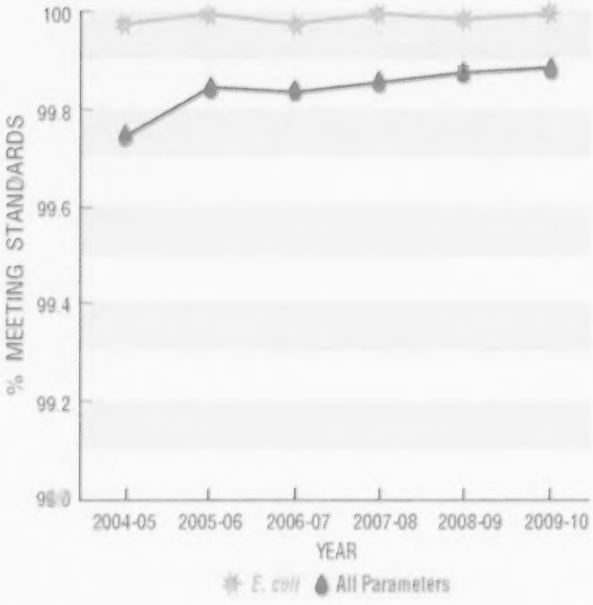
As your drinking water makes its way from our lakes, rivers and aquifers through the treatment and distribution systems, and into the taps of your homes, businesses and schools, we are committed to helping ensure the water meets our health-based standards for quality and safety.

The licensed and eligible laboratories that conduct hundreds of thousands of tests on samples from the drinking water systems are an integral part of our drinking water safety net.

During 2009-10, samples were taken from municipal residential drinking water systems, non-municipal year-round residential drinking water systems and systems serving designated facilities and the ministry received more than 645,000 drinking water test results from laboratories licensed and eligible to perform testing. These tests determine if the treated drinking water meets our Ontario Drinking Water Quality Standards.

I am pleased to report that for 2009-10, Ontario's drinking water systems continued to meet our stringent standards and provide high quality water to the people of Ontario. We have now consistently observed strong results from municipal residential drinking water systems for six consecutive years (see **Chart 1**).

Chart 1: Municipal Residential Drinking Water Systems' Drinking Water Quality Tests Meeting Ontario's Drinking Water Quality Standards for All Parameters and *E. coli* Over Six Years



It is encouraging that **99.88 per cent** of the tests for all parameters from our **municipal residential** drinking water systems met Ontario's rigorous, health-based standards. These systems serve more than 80 per cent of Ontario's population. This year I have also included a water quality analysis by system and am pleased to report that 97 per cent of municipal residential

Know More About the Broader Water Quality in Ontario

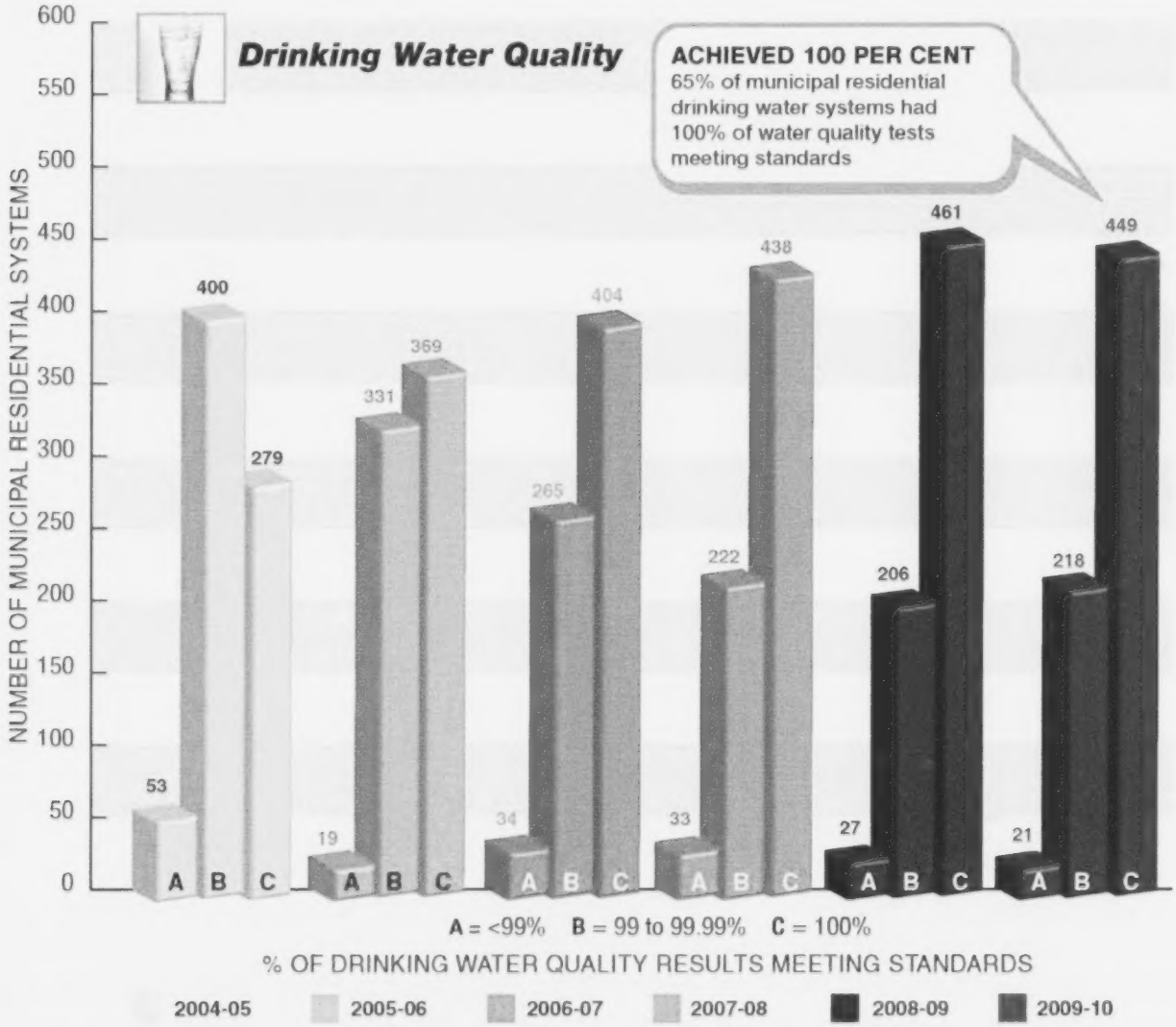
The Ministry of the Environment is not only monitoring drinking water – we also closely monitor the quality of Ontario's lakes, streams, rivers and groundwater to provide us with information on the progress we are making to protect and restore water resources in Ontario. Summaries are available in the 2008 Water Quality in Ontario Report, released in April 2009 and in the 2010 Water Quality in Ontario Report, to be released in 2011.

drinking water systems had 99 per cent or more of their tests meeting our standards and 65 per cent of the systems had 100 per cent of their drinking water quality tests meeting standards (see **Chart 2**).

We observed similarly strong results from non-municipal year-round residential drinking water systems and systems serving designated facilities. **99.51 per cent** of the tests from **non-municipal year-round residential** drinking water systems met provincial standards. These private systems serve residential developments and mobile home parks. And **99.49 per cent** of the tests from systems serving **designated facilities**, such as day nurseries, schools and health care centres that are not served by a municipal residential drinking water system, met provincial standards.

The results are good news for Ontarians. You should continue to have confidence in the quality of your tap water.

Chart 2: Municipal Residential Drinking Water Systems' Drinking Water Quality Tests Meeting Ontario's Drinking Water Quality Standards by System Over Six Years



Safety Net Demands Vigilance

Ongoing monitoring of drinking water is key to maintaining vigilance over the safety of our drinking water. The tests determine if the level of a contaminant exceeds the provincial standard. An exceedance is considered an adverse water quality incident and immediate corrective action is required.

The report of an adverse event does not necessarily mean that the drinking water is unsafe — it indicates that an incident has occurred and the safety of the drinking water supply needs to be confirmed. Actions that must be taken include reporting to the ministry and the local Medical Officer of Health. A Boil Water or Drinking Water Advisory may also be issued.

For more information on detailed drinking water test results and adverse water quality incidents, read the Proven Performance Results section in this report.

LEAD TESTING IN OUR COMMUNITIES, SCHOOLS AND DAY NURSERIES

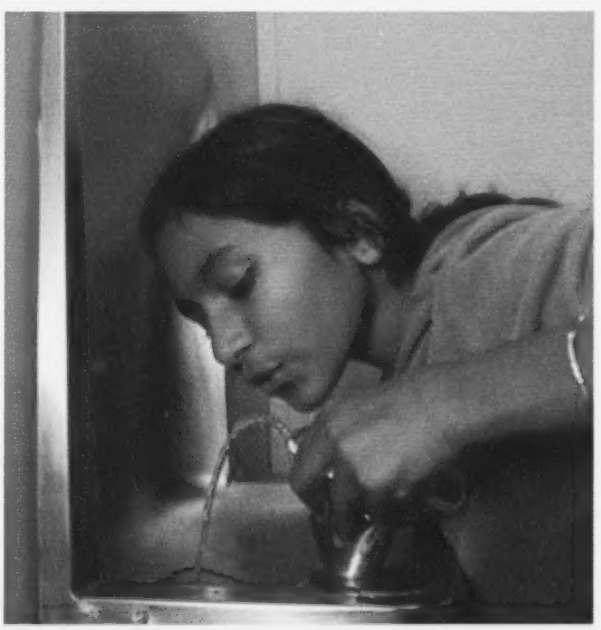
I am pleased to report that test results for lead from drinking water systems — and the plumbing at schools and day nurseries — continue to demonstrate that the majority have met Ontario's standards.

I would like to assure you that Ontario has strict lead testing requirements in place. The government's 2007 Lead Action Plan developed new testing requirements to collect better information about lead levels in our communities' drinking water and new requirements for schools and day nurseries to flush their pipes regularly (pipes are flushed by running the water from drinking water taps for at least five minutes).

We are finding that flushing is an effective way of ensuring lead levels are below the standard of ten micrograms per litre. Testing from schools and day nurseries found that 95.79 per cent of samples taken after pipes had been flushed met the Ontario standard for lead, and 88.54 per cent of standing (non-flushed) samples met the standard.

The results are consistent with those from prior years and clearly demonstrate that flushing works.

Local public health officials along with ministry staff are working closely with schools and day nurseries experiencing problems with lead to address and resolve the issue of lead in plumbing.



RECOGNIZING EXCELLENCE

Making a Clear Choice: City of Hamilton's Tap Water Campaign

Over the past year, many Ontario municipalities have been working to promote municipal tap water. In Hamilton, the city has put together a public education campaign around the value of their tap water. A plan was developed to help citizens make an informed choice through the "I Drink Hamilton Tap Water" campaign.

Launched in June 2010, with print ads in bus shelters and on billboards, the goal of the campaign is to encourage consumers to "make the clear choice" in choosing tap water. Julia Wagner, Project Manager of Conservation and Education for the City of Hamilton explains, "We wanted to build awareness amongst our community around the high quality of our tap water and to encourage individuals to choose tap water."

One of the key messages highlighted by the campaign is the high quality of service and the efforts made towards protecting the drinking water in Hamilton. Wagner emphasises, "Our water was tested about 47,000 times in 2009 — we need to be proud of our local resources."

To expand the reach of the campaign, it is being extended into other water-related events such as school presentations and upcoming water festivals.

INSPECTING ONTARIO'S DRINKING WATER SYSTEMS

The ministry's annual inspection program is one of the most important aspects of our drinking water safety net. These inspections tell us how well a system meets the province's strict regulations. The inspection consists of a series of regulatory questions and our risk-based inspection rating process allows inspection results to be quantified. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

Inspection results for municipal residential drinking water systems

I am pleased to report that for 2009-10, our 693 municipal residential drinking water systems continued to perform very well.

More than half (59 per cent) of the systems achieved a 100 per cent inspection rating, meaning they were in full compliance with the regulations. This is great news. It represents a 10 per cent increase from 2008-09 — the highest operational performance since 2005-06. These results repre-

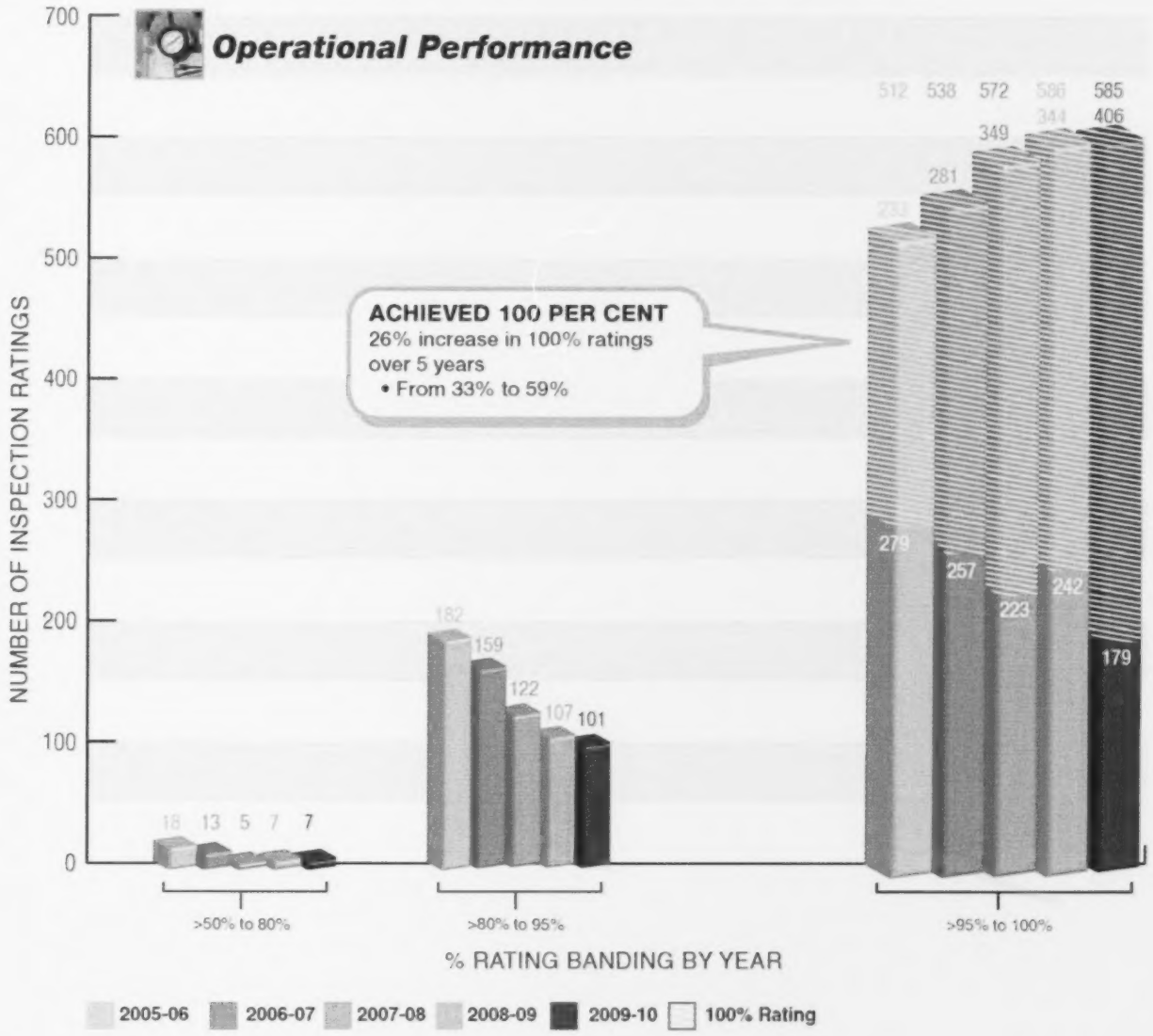
sent a 26 per cent improvement over the previous five years. **Chart 3** shows the details.

Also, 84 per cent of the inspection ratings were 95 per cent or higher, meaning the systems were 95 per cent in compliance with the regulations. And 95 per cent of the inspection ratings were 90 per cent or higher.

It is important to be aware that an inspection rating that is less than 100 per cent does not mean that the drinking water from the system is unsafe. It shows areas where a system's operation can improve. To that end, the ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

For more information on the inspection results, go to the Proven Performance Results section — 2009-10 Report on the Drinking Water Systems Inspections Program.

Chart 3: Municipal Residential Drinking Water Systems' Inspection Rating Trends



RECOGNIZING EXCELLENCE

Innovative Clean Water Technology at the Thornbury Water Treatment Plant

In his 22 years working with the municipal water and wastewater systems for the Town of The Blue Mountains, John Caswell, Manager of Water & Wastewater Services, has seen a lot of changes. "This area has seen tremendous growth over time and our population can even fluctuate greatly by the day," he says, "given our four season tourist industry."

Since 1977, the Thornbury Water Treatment Plant had been using conventional filtration. However, in 2002, turbidity problems began, and, considering the projected population growth, John knew the system needed upgrading.

The town decided on an innovative membrane microfiltration system featuring advanced technology for water filtration including: intake, low lift pumping facilities, three membrane trains, a clearwell for storage, high lift pumps, gas chlorine disinfection, a backwash wastewater system and ultraviolet disinfection.

According to John, this provides a combination of environmental and economic benefits, adding, "We were able to build the new system onto our existing facility's footprint, saving money and time in not having to build on a new site. Our old filtration system, still fully functional, has now been installed in the Hanover Water Treatment Plant, ensuring it doesn't end up as waste." The new system also allows Thornbury to expand its filtration operations as the population grows.

John says the success of the upgrade is the direct result of his superb team, noting, "The water operators deserve all the credit for their efforts working with the general contractor while the new system was installed. Their dedication and responsiveness was unbelievable."

The Thornbury Water Treatment Plant upgrade is a great example of innovative clean water technology, land use planning and waste minimization.

Inspection results for non-municipal year-round residential drinking water systems and systems serving designated facilities

These systems provide drinking water to mobile home parks, residential developments, health care centres, schools and day nurseries. Results for 2009-10 show the quality of water delivered to these residents continues to be good.

We also inspect these systems to ensure they comply with Ontario's drinking water regulations. For 2009-10, we inspected more facilities — 483 systems, up from 259 inspected in 2008-09.

We also inspected eight local services boards which provide local water services in areas that have no municipal structure.

We continue to work closely with owners of non-municipal year-round residential systems to help them understand their responsibilities and improve their compliance with regulations. In addition to continued inspections and compliance actions, other approaches include information kits and an educational video that provides practical information and advice.

Inspection results for schools and day nurseries

As part of our Lead Action Plan, we help ensure day nurseries and public and private schools flush their taps, submit samples to laboratories licensed and eligible to test drinking water and keep records of their findings. Inspection results indicate an improvement in the compliance of day nurseries and schools since the Lead Action Plan was implemented in 2007.

LICENSING THE MUNICIPAL SYSTEMS THAT PROVIDE DRINKING WATER

We have made excellent progress on our licensing program for municipal residential drinking water systems. The program, incorporating a quality management system, is the first of its kind in North America. Implemented in January 2009 it builds continuous improvement into the systems' day-to-day operations. The program holds owners to a high standard of operating and managing their drinking water systems — covering everything from the water that goes into the system and how the system is run, to financial planning for the future.

I am pleased to report that 86 per cent of the 303 municipal drinking water system owners subject to O. Reg. 188/07 (Licensing of Municipal Drinking Water Systems) have received their draft and/or final licences under the new program. By December 31, 2010 we issued 272 final licences to 108 owners, and the remaining applications were being processed. Our goal is to have all owners subject to the requirements of the regulation licensed by September 2011.

Indeed, municipalities are already reporting benefits from the new licensing program. The program has provided them with an excellent tool for transferring knowledge and increasing communications internally. It has also helped to clearly outline roles and responsibilities, identify gaps in the system and procedures to address these gaps, reduce duplication and improve documentation.

We are proud to say that, given the success of the program, we are getting interest from other drinking water system managers in North America.

We would not have been able to see such progress without the dedication of the owners and operators of Ontario's drinking water systems. I thank all of them for working in partnership with the ministry and making the launch of this program a success.

Helping Municipal Councillors Better Protect Your Water

Ensuring the safety of Ontario's drinking water is a shared responsibility. It requires dedication and constant vigilance from many partners. More than 80 per cent of Ontario's population receives their drinking water from municipal residential drinking water systems and much of the important work of maintaining safe drinking water is done at the municipal level.

Your municipal councillors and other municipal officials oversee drinking water in your community. To help them, the Ministry of the Environment and the Walkerton Clean Water Centre worked this past year with an advisory group of municipal mayors, councillors and interested associations to develop a new guide and training course specially designed to assist municipal councillors understand their responsibilities for safeguarding drinking water. The new guide and training will roll out in 2011.

TRAINING THE PEOPLE WHO OPERATE YOUR DRINKING WATER SYSTEMS

The strength of our drinking water safety net relies on the people who operate the drinking water systems. That is why we help ensure that they are among the best trained operators in the world. It is absolutely imperative that they meet our high professional standards by completing a rigorous training program at the beginning of their careers, and complete 20 to 50 hours of training each year to maintain their certifications.

Our world-class Walkerton Clean Water Centre provides high quality training to operators and, as of December 31, 2010, has trained more than 26,400 participants. In June 2010, the centre officially opened its permanent facility, with Justice O'Connor and the Ministers of the Environment and Agriculture, Food and Rural Affairs in attendance. This state-of-the-art learning centre houses a new technology demonstration facility with a laboratory space as well as a drinking water pilot plant and distribution system. The centre also has mobile training units, which provide on-site training in northern Ontario, particularly in small, remote and First Nations communities.

In addition, the ministry, in partnership with the Walkerton Clean Water Centre, has entered into agreements with 14 community colleges to offer the ministry's entry-level course for drinking water operators to students in identified environmental diploma programs. The successful completion of the entry-level course is mandatory for all drinking water operators before obtaining Class 1 certification. By introducing this course in college curricula, interested students now have a clear career pathway to becoming a drinking water operator. As of December 31, 2010, the Walkerton

Clean Water Centre had issued 266 entry-level course completion certificates to graduates of college programs. For more information about the college partnership and list of participating colleges, please visit www.wcwc.ca/en/training/ministrysentrylevelcoursecollegeprogram.asp.

Tap into a Drinking Water Career for Operators

Consider a rewarding career as a drinking water operator! Treating and supplying your community with safe drinking water is an important and rewarding responsibility. The work of an operator is varied and challenging. Pam Osso, Drinking Water Operator, says "What I like most about being an operator is that every day is different." Jennifer Ball, Drinking Water Operator, adds that "The most enjoyable part of being an operator is just providing safe water to the public. I am proud of that."

Ontario has put in place a number of tools to help you obtain the training and knowledge required to become a certified drinking water operator. Pam Osso observes that "It's important to get training because it helps you keep up to date with new technology."

For more information visit the operator training and certification page on the Drinking Water Ontario website.

PERFORMING DRINKING WATER TESTING

Safeguarding Ontario's drinking water also involves regular inspections of the laboratories that conduct tests on the province's drinking water as required by the Safe Drinking Water Act and the Health Protection and Promotion Act. Laboratories that perform drinking water tests must be inspected annually, accredited and licensed. Out-of-province laboratories that analyze Ontario's drinking water must be on the Director's Out-of-Province Eligibility List, and in 2009-10 there was one eligible laboratory on the list.

I am pleased to report that the laboratories continue to perform very well. During 2009-10, we inspected all 52 licensed laboratories at least twice. Each of these laboratories received at least one unannounced inspection. The ministry also completed one unannounced inspection at an eligible laboratory located outside of Ontario. For information on the inspection results, go to the Proven Performance Results section of this report — 2009-10 Laboratory Licensing & Compliance Program Results.

We also complement our inspections program with outreach tools to help ensure laboratories have a common understanding of their legislative responsibilities. For example, we issue Laboratory Update Bulletins to provide information on a number of important topics, including the immediate reporting of adverse test results.

I would like to personally assure you that Ontario's drinking water is among the best protected in the world and is of the highest quality. The Ministry of the Environment and all of our partners remain dedicated to protecting your drinking water. So enjoy Ontario's finest on tap!

99.88%
of tests from municipal residential drinking water systems met standards

99.51%
of tests from non-municipal year-round residential systems met standards

99.49%
of tests from systems serving designated facilities met standards

Proven Performance Results

Ontario's drinking water continues to meet our strict standards, and the performance of our drinking water systems continues to improve.

This section of the report includes an overview of the general performance of the following drinking water system categories which are referred to as facility types:

- **Municipal residential drinking water systems:** municipally owned systems that supply drinking water to more than 80 per cent of Ontario's population.
- **Non-municipal year-round residential drinking water systems:** privately owned systems that supply drinking water to residential developments and mobile home parks.
- **Drinking water systems serving designated facilities:** systems serving populations that may be more vulnerable to drinking water contamination, such as day nurseries, schools and health care centres.

Performance is assessed by evaluating both the quality of the drinking water that is produced and how well the system or laboratory does during an inspection.

Detailed data is provided on the quality of the drinking water the systems produce, including information on the microbiological, chemical and radiological test results.

In the latter part of the report you'll find information on the inspection program, which includes inspection results of the drinking water systems and the laboratories that conduct tests on the drinking water samples.

The data covers the period of April 1, 2009 to March 31, 2010.

OVERVIEW OF THE PERFORMANCE OF YOUR DRINKING WATER SYSTEMS

Regular and reliable testing of your drinking water is one of the key components of Ontario's drinking water safety net. Ontario's drinking water systems are required to submit drinking water samples to laboratories licensed or eligible to perform drinking water tests. The tests determine whether the drinking water meets Ontario's drinking water quality standards as laid out in the Ontario Drinking Water Quality Standards Regulation (O. Reg. 169/03).

Test results for 2009-10 clearly indicate that Ontario's drinking water systems continue to provide high quality drinking water to our taps.

Setting Ontario Drinking Water Quality Standards

Ontario relies on 158 health-based quality standards to set limits for contaminants in drinking water. The ministry has established standards for two microbiological parameters, 78 chemical parameters and 78 radiological parameters. The Ontario Drinking Water Quality Standards can be found in O. Reg. 169/03 made under the Safe Drinking Water Act.

Microbiological: Microbiological organisms include total coliforms and *Escherichia coli* (*E. coli*) bacteria. Their presence indicates microbiological contamination and the potential for serious health problems. For this reason, the drinking water standards for microbiological parameters require that total coliforms and *E. coli* should not be detectable in drinking water. Mandatory reporting and corrective actions are undertaken if these pathogens are detected.

- **Chemical:** Ontario's drinking water quality standards protect Ontario consumers by establishing the maximum acceptable concentration for chemical parameters, such as lead and mercury, that can be present in drinking water. The frequency of testing for these chemical parameters depends on the type of chemical, the category of drinking water system, the size of the population the system serves and the type of water source.
- **Radiological:** Ontario has developed standards for various radionuclides in drinking water based on protecting the health and safety of consumers. A select number of municipal residential drinking water systems are required to sample for radiological parameters under their Certificates of Approval or municipal drinking water licences. No tests for radionuclides were conducted for non-municipal year-round residential or systems serving designated facilities in 2009-10.

The province has also adopted operational parameters for various other aspects of water quality, such as colour, odour, taste and turbidity.

In 2009-10, laboratories licensed or eligible to perform drinking water tests submitted about 645,000 test results electronically to the ministry. The results show that the regulated drinking water systems in Ontario continue to provide high quality drinking water to your taps. In 2009-10, 99.88 per cent of drinking water tests at municipal residential systems met Ontario's rigorous, health-based drinking water standards.

Table 1 summarizes the test results for the three drinking water facility types. We have seen a consistent trend of excellent test results over the past six years. Whenever test results find concentrations that exceeded the allowable limits permitted by the Ontario Drinking Water Quality Standards, corrective action is required to be taken.

Table 2 lists the number of registered drinking water systems and the number of systems that submitted test results.

Table 3 lists the different types of designated facilities and the number of drinking water systems serving them.

Table 1: Drinking Water Test Results for Drinking Water Systems

Facility Type	Per Cent of Drinking Water Tests Meeting Standards					
	2009-10[1]	2008-09[2]	2007-08	2006-07	2005-06	2004-05
Municipal Residential Drinking Water Systems	99.88	99.87	99.85	99.83	99.84	99.74
Non-Municipal Year-Round Residential Systems	99.51	99.40	99.40	99.40	99.45	99.41
Systems Serving Designated Facilities	99.49	99.38	99.39	99.49	99.42	99.06

[1]Lead distribution results were included and lead plumbing results were reported separately.
[2]Lead results were not included as they were reported separately.

Table 2: Number of Drinking Water Systems Registered with the Ministry and the Number of Systems Submitting Drinking Water Test Results for 2009-10

Facility Type	Number of Systems Registered	Number of Systems Submitting Drinking Water Test Results	Explanation for Difference Between Systems Registered and Systems Submitting Results
Municipal Residential Drinking Water Systems	693	688	Supplied Water[1] Amalgamated System[2]
Non-Municipal Year-Round Residential Systems	468	425	Supplied Water[1] or Cistern System[3] or No samples were uploaded to the ministry and owners have been contacted to resolve the issue.
Systems Serving Designated Facilities	1,650	1,445	

[1]Some systems have agreements in place to have their water supplied by another municipal residential drinking water system. These other systems performed the collection and submission of samples.
[2]Two systems were amalgamated. Sample collection and submission were carried out for the amalgamated system as a whole.
[3]Systems that received drinking water for their cistern from municipal residential drinking water systems which carried out the required sampling.

Table 3: Number of Registered Systems Serving Different Types of Designated Facilities as of March 31, 2010

Primary Function of Systems Serving Designated Facilities	Number of Systems Serving Designated Facilities	
	2009-10	2008-09
School[1]	621	638
Social Care	509	509
Health Care	112	112
Children's Camp	405	403
Other	3	1
Total	**1,650**	**1,663**

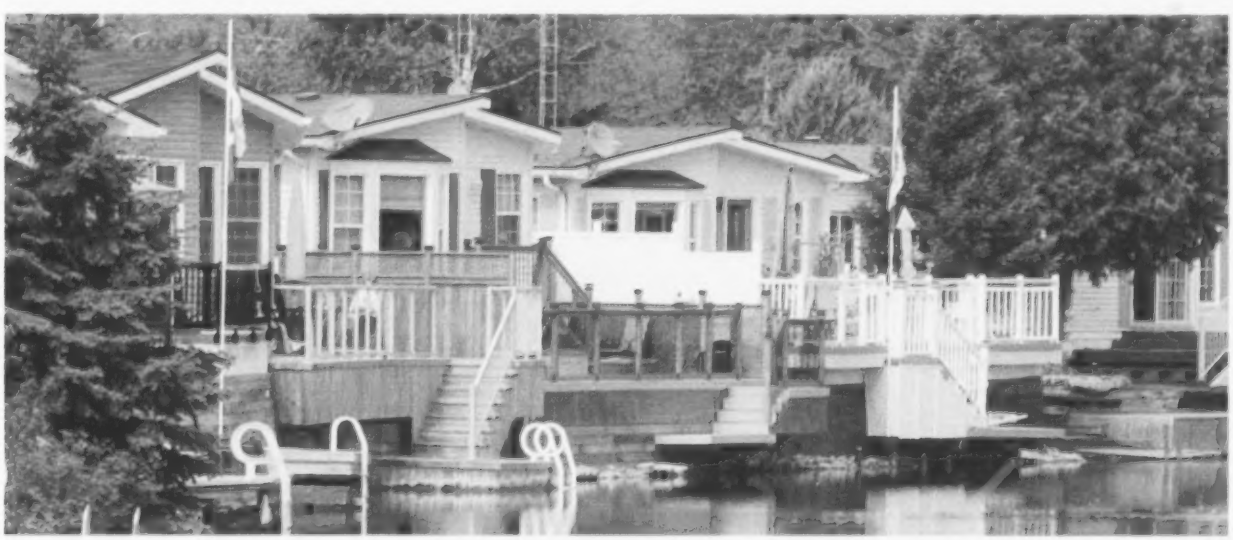
[1]Includes public schools, private schools, universities and college facilities. In some cases, the drinking water system served both a school and health care facility or social care facility.

MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEMS — OVERALL TEST RESULTS

Municipal residential drinking water systems provide drinking water to more than 80 per cent of Ontario residents. These systems had 99.88 per cent of the tests meeting Ontario's drinking water standards. This is quite significant given that 524,124 microbiological, chemical and radiological tests were conducted on drinking water samples from 688 municipal residential drinking water systems. Of these tests, 99.92 per cent of the microbiological and 99.64 per cent of the chemical test results met the provincial standards. No exceedances for radiological parameters were found.

NON-MUNICIPAL YEAR-ROUND RESIDENTIAL DRINKING WATER SYSTEMS — OVERALL TEST RESULTS

A total of 43,165 drinking water samples from 425 non-municipal year-round residential drinking water systems were tested. The results show that 99.51 per cent of all tests for these systems met Ontario standards (up from 99.40 per cent for 2008-09). Of these tests, 99.52 per cent of the microbiological and 99.49 per cent of the chemical test results met provincial standards.



SYSTEMS SERVING DESIGNATED FACILITIES — OVERALL TEST RESULTS

A total of 78,297 tests were conducted on drinking water samples from 1,445 systems serving designated facilities. The results show that 99.49 per cent of the tests met provincial standards. Of these tests, 99.55 per cent of the microbiological and 99.36 per cent of the chemical test results met provincial standards.

Table 4 provides a summary of the test results for each facility type by parameter (microbiological, chemical and radiological). The results for the chemical parameters include testing for lead in the distribution systems, but not for lead in plumbing systems. The results for lead testing in plumbing are summarized in Table 5.

The test results for 2009-10 show that Ontario's drinking water systems continue to deliver high quality water to our taps. You should be confident in the quality of your drinking water.

Table 4: Summary of Drinking Water Test Results for All Facility Types from April 1, 2009 to March 31, 2010

Facility Type	Parameter	# of Systems Submitting Results	# of Systems with Exceedances	# of Results	# of Exceedances	% Exceedance	2009-10 % Meeting Standards
Municipal Residential Drinking Water Systems	*E. coli*	681	20	229,467	25	0.01	99.99
	Total Coliform	681	173	229,521	348	0.15	99.85
	Total Microbiological	681	173	458,988	373	0.08	99.92
	Chemical[1]	684	89	65,126	234	0.36	99.64
	Radiological	3	0	10	0	0.00	100.00
	TOTAL	**688**	**239**	**524,124**	**607**	**0.12**	**99.88**
Non-Municipal Year-Round Residential Systems	*E. coli*	425	7	15,653	13	0.08	99.92
	Total Coliform	425	74	15,646	138	0.88	99.12
	Total Microbiological	425	74	31,299	151	0.48	99.52
	Chemical[1]	356	23	11,866	60	0.51	99.49
	Radiological	0	0	0	0	Not applicable	Not applicable
	TOTAL	**425**	**93**	**43,165**	**211**	**0.49**	**99.51**
Systems Serving Designated Facilities	*E. coli*	1,425	12	26,088	15	0.06	99.94
	Total Coliform	1,425	142	26,090	220	0.84	99.16
	Total Microbiological	1,425	142	52,178	235	0.45	99.55
	Chemical	1,226	44	26,119	166	0.64	99.36
	Radiological	0	0	0	0	Not applicable	Not applicable
	TOTAL	**1,445**	**182**	**78,297**	**401**	**0.51**	**99.49**

[1]Lead plumbing results were not included in the chemical analysis for 2009-10. Lead distribution results were included.

Table 5: Summary of Drinking Water Test Results for Lead in Plumbing for Municipal Residential Drinking Water Systems and Non-Municipal Year-Round Residential Systems from April 1, 2009 to March 31, 2010

Facility Type	Parameter	# of Systems Submitting Results	# of Systems with Exceedances	# of Results	# of Exceedances	% Exceedance	2009-10 % Meeting Standards	2008-09 % Meeting Standards	
								Jun 08-Oct 08	Dec 08-Apr 09
Municipal Residential Drinking Water Systems	Lead in plumbing[1]	398	129	31,636	1,134	3.58	96.42	96.8	97.8
Non-Municipal Year-Round Residential Systems	Lead in plumbing[1]	171	19	2,650	40	1.51	98.49	98.0	98.8
Total		**569**	**148**	**34,286**	**1,174**	**3.42**	**96.58**	**96.9**	**97.9**

[1]Samples taken after flushing of system occurred.

CORROSION CONTROL FOR MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEMS

Corrosion in a pipe occurs when its inner surface is worn away; if the pipe's inner surface contains lead, corrosion can cause lead to enter the drinking water system. Corrosion control planning may be required for municipal residential systems that provide drinking water to residential developments with more than 100 private residences. Under O. Reg. 170/03, these systems must submit a corrosion control plan to the ministry if:

- more than 10 per cent of all plumbing locations reported lead amounts greater than 10 micrograms/L in two out of three sampling rounds, and
- in those two rounds, at least two samples exceeded the standard for lead of 10 micrograms/L.

Corrosion control plans must include an analysis of the potential for lead leaching, due to corrosion in the system or in plumbing connected to the system, and the measures the drinking water system owners will take to reduce this potential. The plans must be submitted to the ministry within a year of the end of the sampling period in which the drinking water system has met the above criteria for entering into a corrosion control program.

Since 2007, a total of 19 Ontario communities were required to prepare corrosion control plans. Eighteen of these communities were included in the 2008-2009 Chief Drinking Water Inspector's report, of which seven have submitted corrosion control plans. Also, seven received regulatory relief as they are pursuing infrastructure improvements. The ministry continues to work with the remaining communities on the submission of their plans.

2009-10 DRINKING WATER QUALITY TEST RESULTS

MICROBIOLOGICAL TEST RESULTS

Microbiological tests of drinking water samples can detect the presence of total coliforms and *E. coli* bacteria. Total coliforms are a group of waterborne bacteria that are used as an indicator of water quality. Their presence in treated water could indicate inadequate treatment. *E. coli* are common bacteria found in human and animal intestines and occur naturally in the environment. Some strains of these organisms can cause serious health problems.

Corrective action is required immediately whenever microbiological exceedances are detected in drinking water. These actions continue to be taken until the issue is resolved. It is the ministry's experience that improper sampling methods and sampling locations can result in an adverse microbiological result. Flushing the system and resampling, to ensure that disinfection levels are adequate, typically resolves these issues.

During all adverse incidents, ministry staff continue to work and communicate with system owners and the local public health unit to ensure corrective actions are taken. If the issue is ongoing, ministry staff in collaboration with local public health units and the system owners will continue to monitor the incident to ensure it is resolved. All corrective actions have to be identified in a final report and submitted to the ministry once the issue has been resolved.

The number of regulated systems with *E. coli* test results in 2009-10 (see **Charts 4**, **5** and **6**) can be summarized as follows:

- Three per cent of municipal residential drinking water systems that submitted samples reported the presence of *E. coli*, and of these, four systems reported more than one *E. coli* exceedance.
- Two per cent of non-municipal year-round residential drinking water systems that submitted samples reported the presence of *E. coli*, and of these, two systems reported more than one *E. coli* exceedance.
- One per cent of systems serving designated facilities that submitted samples reported the presence of *E. coli*, and of these, two systems reported more than one *E. coli* exceedance.

Chart 4: Test Results for *E. coli* from Municipal Residential Drinking Water Systems

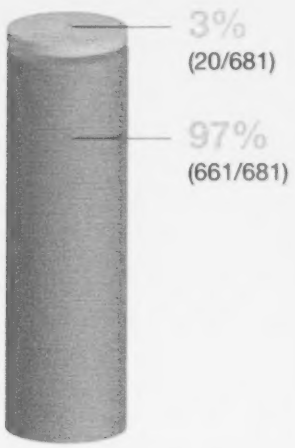


Chart 5: Test Results for *E. coli* from Non-Municipal Year-Round Residential Drinking Water Systems

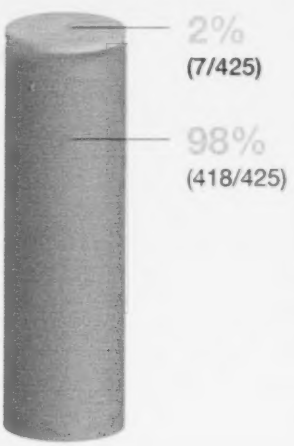
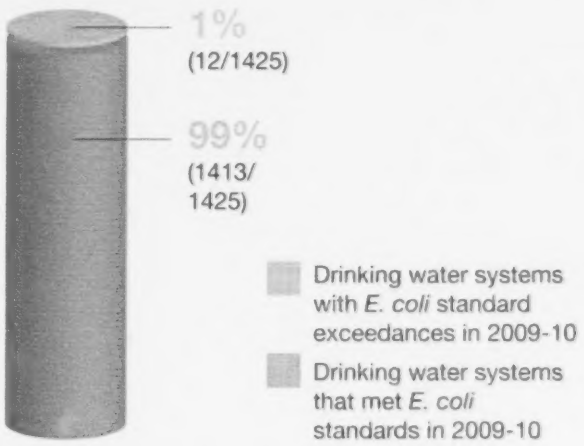


Chart 6: Test Results for *E. coli* from Drinking Water Systems Serving Designated Facilities



CHEMICAL TEST RESULTS

Chemical test results for 2009-10 (see **Charts 7**, **8** and **9**) can be summarized as follows:

- 13 per cent of municipal residential drinking water systems that submitted samples reported chemical exceedances, and of these, 46 systems reported more than one exceedance.
- Six per cent of non-municipal year-round residential drinking water systems that submitted samples reported chemical exceedances, and of these, 13 systems reported more than one exceedance.
- Four per cent of systems serving designated facilities that submitted samples reported chemical exceedances, and of these, 34 systems reported more than one exceedance.

Some adverse incidents are caused when chemicals occur naturally in the source water. In such cases, it can take longer to address the issue. The ministry stresses vigilance and monitors the incident.

None of the municipal residential drinking water systems reported exceedances relating to radiological tests.

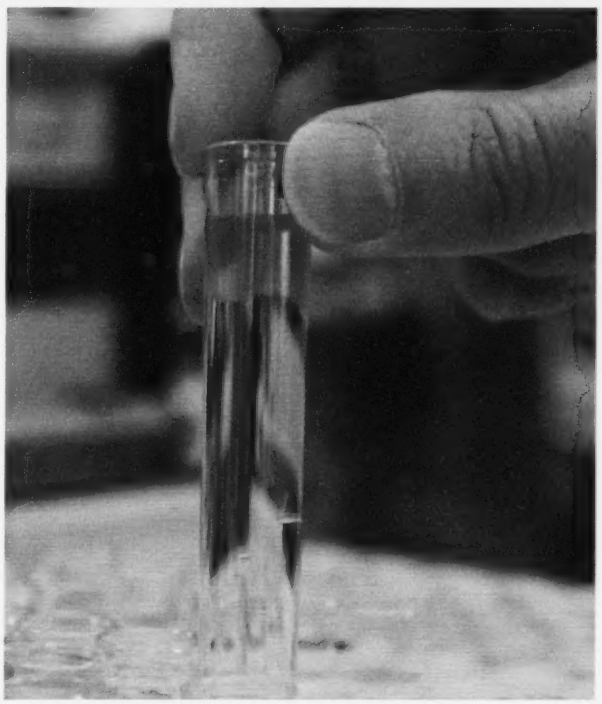


Chart 7: Test Results for Chemical Parameters from Municipal Residential Drinking Water Systems

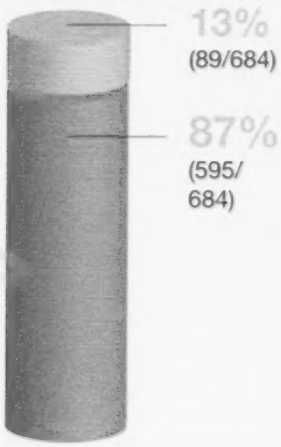


Chart 8: Test Results for Chemical Parameters from Non-Municipal Year-Round Residential Drinking Water Systems

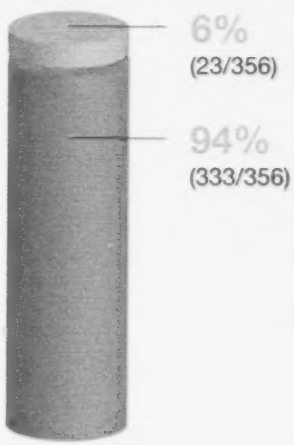


Chart 9: Test Results for Chemical Parameters from Drinking Water Systems Serving Designated Facilities

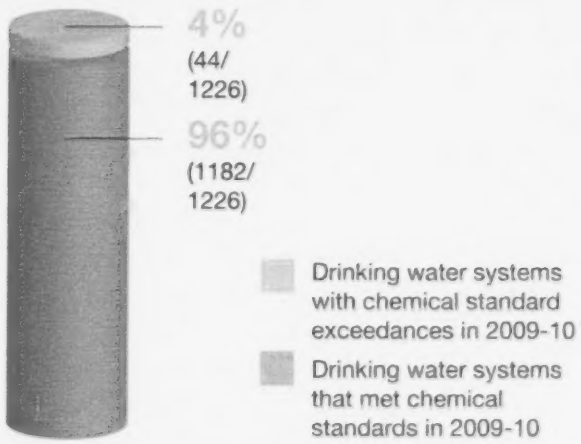


Table 6 lists the various chemical parameters that drinking water tests measure and the number of chemical exceedances that were reported during 2009-10 by the three facility types.

Table 6: Number of Chemical Standard Exceedances by Facility Type for 2009-10

Parameter	Number of Exceedances		
	Municipal Residential Drinking Water Systems	Non-Municipal Year-Round Residential Systems	Systems Serving Designated Facilities
Barium[1]	4	2	0
Benzo[a]pyrene	1	0	0
Fluoride[1]	74	6	48
Lead[2]	68	14	8
Nitrate (as Nitrogen)	3	12	53
Nitrite (as Nitrogen)	0	1	1
Nitrogen (Nitrate + Nitrite)	3	12	54
Selenium[1]	10	2	2
Trihalomethanes	69	5	0
Uranium[1]	2	6	0
Chemical Total	**234**	**60**	**166**

[1]In some parts of the province, there are naturally occurring deposits of barium, fluoride, selenium and uranium.
[2]Chemical totals did not include lead sampled in plumbing for municipal residential and non-municipal year-round residential systems. Lead sampled in the distribution system was included.

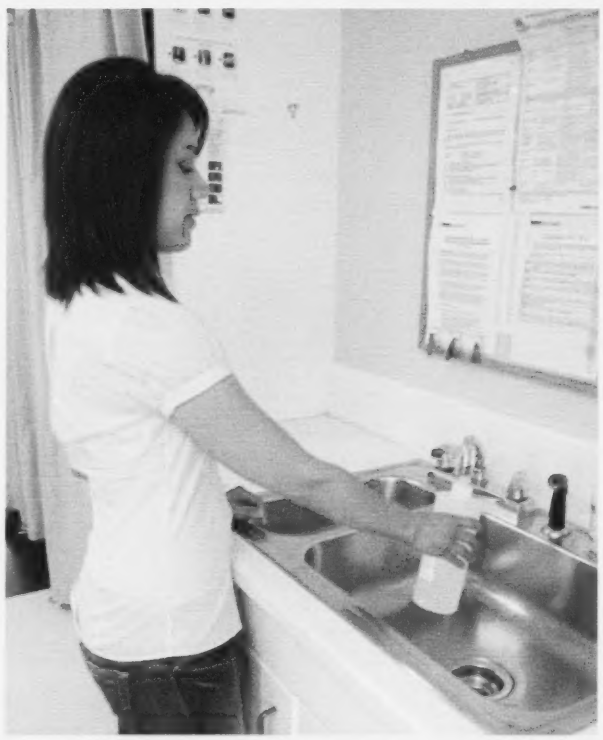
LEAD TESTING RESULTS FOR SCHOOLS AND DAY NURSERIES FOR 2009-10

Under O. Reg. 243/07, schools and day nurseries are required to take two types of drinking water samples when testing for lead:

- **Standing** – after the plumbing has not been used for at least six hours.
- **Flushed** – after the water has been running or flushing for five minutes, followed by a 30 to 35 minute waiting period.

Facility Results: for facilities that submitted results, 90.29 per cent reported standing results that met the drinking water standard for lead, and 96.91 per cent reported flushed results that met the standard.

Sample Results: 88.54 per cent of standing samples met the standard and 95.79 per cent of flushed samples met the Ontario standard for lead.



Tests for lead in drinking water continue to demonstrate that flushing has proven to be an effective way to help ensure the lead standard is met.

Table 7 provides a summary of the 2009-10 lead testing results for schools and day nurseries.

Table 7: Summary of Schools and Day Nurseries Submitting Lead Results under O. Reg. 243/07 for 2009-10

Parameter	2009-10 Facility Results				2009-10 Sample Results			
	# of Facilities Submitting Results	# of Facilities with Exceedances	% Facilities with Exceedances	% Facilities with Results Meeting Standards	# of Results	# of Exceedances	% Exceedance	2009-10 % Samples Meeting Standards
Lead - Standing	7,685	746	9.71	**90.29**	8,951	1,026	11.46	**88.54**
Lead - Flushed	7,696	238	3.09	**96.91**	9,087	383	4.21	**95.79**

REPORT ON ADVERSE WATER QUALITY INCIDENTS

Swift, strong action on adverse water quality incidents (AWQIs) is a critical component of Ontario's drinking water safety net. Under O. Reg. 170/03, AWQIs include:

- Any exceedance of a prescribed Ontario Drinking Water Quality Standard.
- The presence of other specified microbiological organisms that are not listed in the Ontario Drinking Water Quality Standards.
- Exceedances of health-related parameters that are specified in a Certificate of Approval, municipal drinking water licence or order, or operational parameters such as high turbidity (cloudiness).

An AWQI indicates that a drinking water standard has been exceeded or a problem has arisen within a drinking water system. The report of an adverse event does not indicate that drinking water is unsafe; it indicates that an incident has occurred and corrective action must be taken.

If the adverse result is identified at a laboratory, the laboratory must immediately notify the owner and/or operating authority of the system, the Ministry of the Environment's Spills Action Centre and the local Medical Officer of Health. When a drinking water system owner or operator is made aware of an adverse test result, they must also immediately notify the Ministry of the Environment's Spills Action Centre and the local Medical Officer of Health so that appropriate action can be taken.

O. Reg. 170/03 provides specific corrective actions depending on the adverse event. Corrective action may include re-sampling, adjusting the system or treatment processes, or notifying system users. The owner must also take any additional measures as directed by the local Medical Officer of Health, which could include issuing a Boil Water Notice or Advisory or a Drinking Water Notice or Advisory.

The ministry then works with the Medical Officer of Health to confirm that the owner of the system is rectifying the situation. The ministry monitors the event to ensure all appropriate corrective actions are completed to resolve the issue and to safeguard the drinking water supply for the system users.

In most situations, system owners are able to quickly address and resolve the issue that led to a report of an AWQI. In some instances it may take a longer period of time as changes may be needed to a system's treatment, process and/or operations.

When needed, the ministry will initiate a priority field response to conduct a site inspection, and where necessary collect audit drinking water samples. The ministry also manages all resolution reports from drinking water system owners to ensure the AWQIs have been appropriately resolved.

Summary of Adverse Water Quality Incidents by Drinking Water Facility Type for 2009-10

It is worth noting that a single AWQI may have multiple results, for example if more than one standard is exceeded.

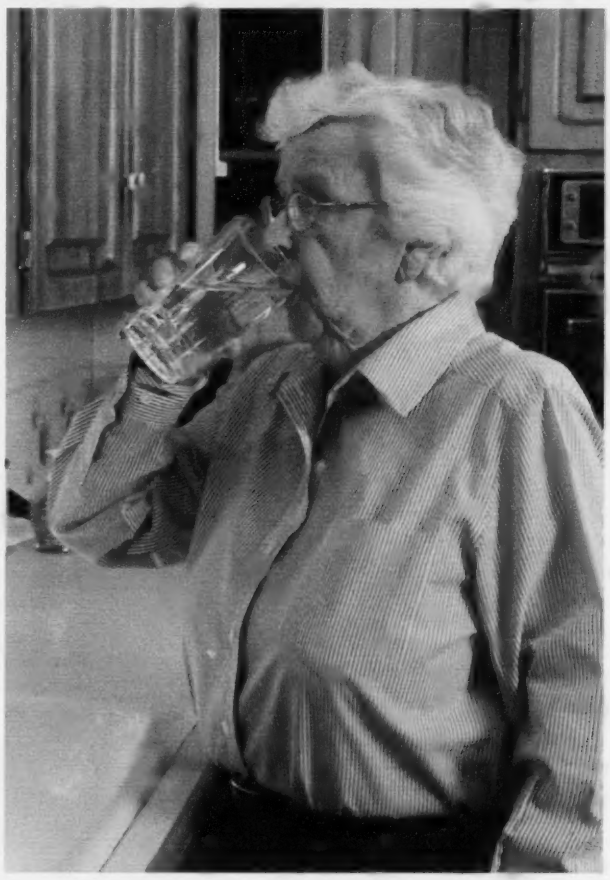
Municipal residential drinking water systems: A total of 412 municipal residential drinking water systems reported 1,585 AWQIs, based on 1,706 adverse test results. Microbiological exceedances accounted for 23.1 per cent of these, while 17.7 per cent were chemical test results, and 59.2 per cent were for other parameters. The 'other' category includes high sodium, turbidity, low chlorine, low pressure, low ultraviolet voltage dosage, water main breaks and equipment failure.

Non-municipal year-round residential drinking water systems: A total of 197 non-municipal year-round residential drinking water systems reported 397 AWQIs, resulting from 470 adverse test results. Systems in this facility type reported that 33.7 per cent of their results within AWQIs were related to microbiological test results, while 23.2 per cent were chemical test results, and 42.1 per cent were for other parameters.

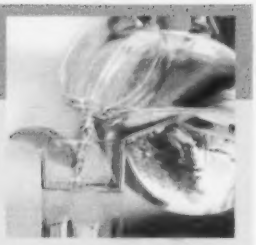
Systems serving designated facilities: A total of 351 drinking water systems serving designated facilities reported 606 AWQIs based on 728 adverse results — 38.6 per cent of which were microbiological, 26.1 per cent of which were chemical, and 34.9 per cent of which were other parameters.

Systems serving schools and day nurseries: A total of 853 schools and day nurseries reported 1,160 AWQIs containing 1,475 results within AWQIs. Of the 1,475 results, 389 were from flushed samples and 1,086 were from standing samples.

Overall, the response provided by regulated systems to adverse water quality incidents during 2009-10 demonstrates that Ontario's drinking water safety net is effective in protecting public health.



DRINKING WATER FACTS



Know the Different Types of Water Advisories

Boil water advisories and drinking water advisories are issued by the local Medical Officer of Health if there is a concern that drinking water may not be safe for public consumption. Advisories may be issued due to a known contaminant, or as a precaution due to potential or suspected contamination.

A boil water advisory instructs users to boil any water that may be used for purposes such as drinking or cooking. This type of advisory would be used when microbial contamination has been detected, e.g. an adverse water quality incident, or as a proactive measure where it is suspected. A drinking water advisory is issued when boiling water is ineffective at removing or reducing the risk of a contaminant, such as sodium or lead.

If bacteria, such as *E. coli*, may have entered the water supply, communities will be advised to boil their water before consuming it. However, if chemical contaminants may be present in the drinking water supply and cannot be removed by boiling or disinfecting the water, a drinking water advisory will be issued. Consumers are advised to use an alternate water supply until further notice. The local Medical Officer of Health will issue advisories to the public through the media, by door-to-door notification or public posting of notices.

Drinking water advisory notices are tools used to protect consumers when the safety of the drinking water may be in question, and as a precautionary measure during times of system maintenance such as watermain repairs. They are issued using a risk-based approach, and remain in place until corrective actions have been taken and the health unit is satisfied that the water does not pose a health risk. In most situations, system owners are able to quickly fix the issue, and the advisory is lifted within one to two weeks. In some cases, actions such as designing and installing new treatment are required to resolve the issue and the advisory may remain in effect for longer periods of time.

Any water advisory that remains in place for longer than 12 months is considered a long-term boil water or drinking water advisory. Long-term advisories typically require significant corrective actions, such as the installation or upgrading of the water treatment plant to resolve the issue. A Medical Officer of Health will only lift the advisory if they are satisfied that all corrective actions have been taken and that the situation has been remedied.

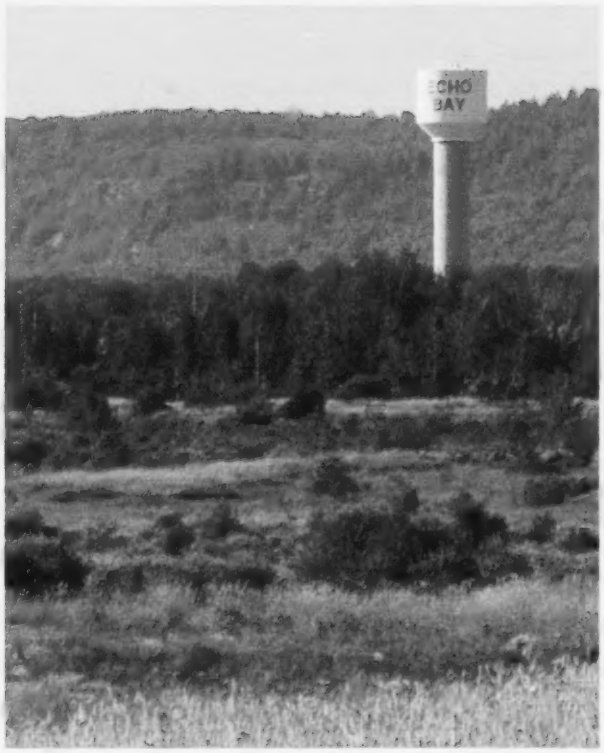
As of March 31, 2010, a total of five municipal residential drinking water systems had a long-term boil water advisory or drinking water advisory. Four of those systems were included in the 2008-2009 Chief Drinking Water Inspector's report, and three of them have since had their boil water advisory lifted. The ministry continues to work with the two remaining drinking water system owners to ensure that they take appropriate corrective actions. This may include additional upgrades to an existing plant or the installation of a new treatment system.

2009-10 REPORT ON THE DRINKING WATER SYSTEMS INSPECTION PROGRAM

This section provides inspection results (covering the period April 1, 2009 to March 31, 2010) for drinking water systems and licensed or eligible laboratories, as well as data on operator certification and a summary of convictions by facility type.

The annual inspections of municipal residential drinking water systems help the ministry determine how well the systems are operating when compared to regulatory requirements. If ministry inspectors find non-compliance issues, they use a range of tools to help municipal system owners and operators effectively address them.

INSPECTION RESULTS FOR MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEMS



Over the past five years, inspection results for municipal residential drinking water systems have shown continuous improvement, with very good overall performance ratings as shown in Chart 10. In 2009-10, all 693 municipal residential drinking water systems were inspected. Of these ratings:

- 59 per cent of inspection ratings achieved 100 per cent, which means inspectors found no areas of non-compliance. This result is a 10 per cent improvement from the 2008-09 rating of 49 per cent.
- 84 per cent of inspection ratings were greater than 95 per cent — the same as 2008-09.
- 95 per cent of inspection ratings were higher than 90 per cent.

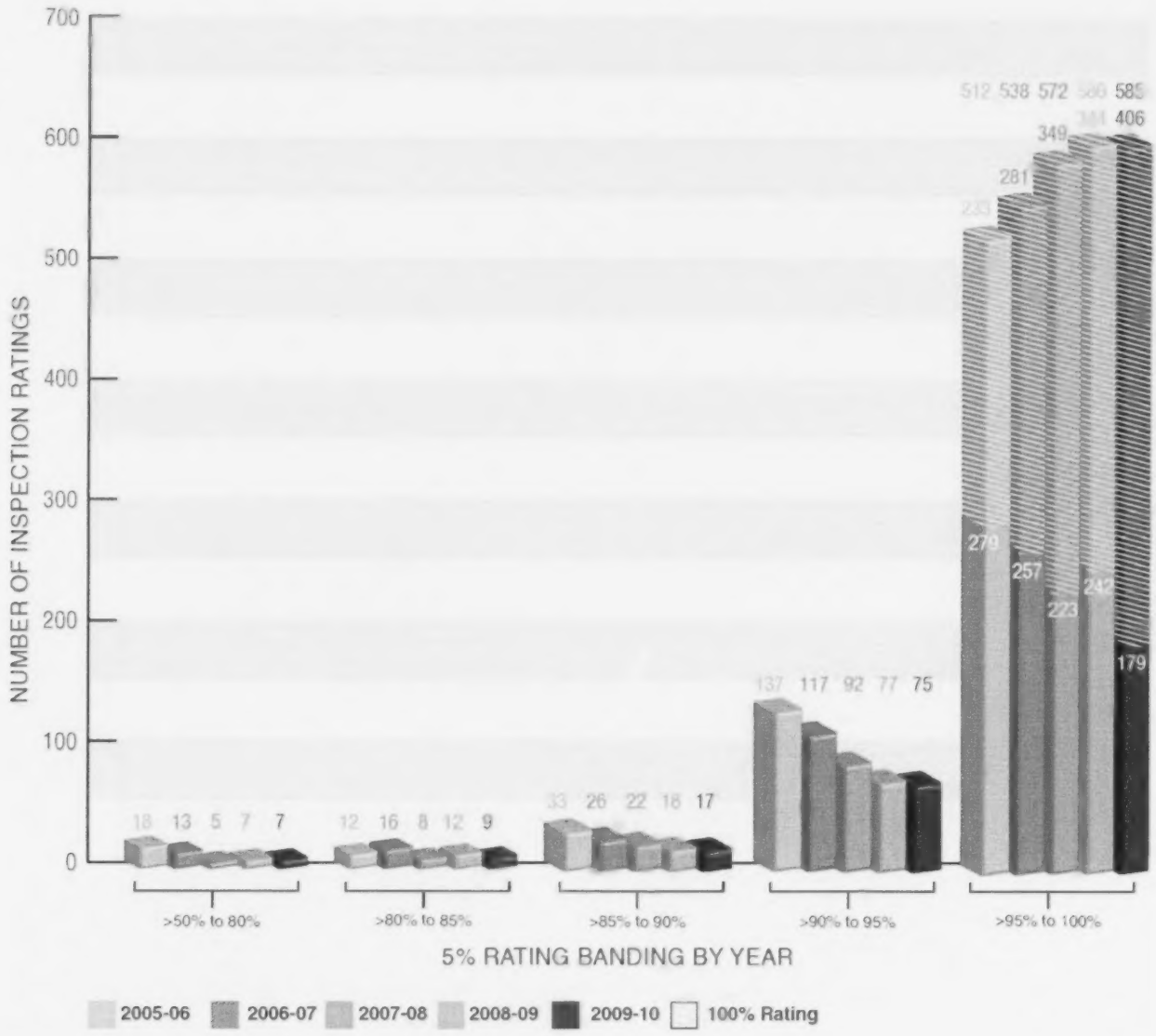
When comparing the 2009-10 and 2008-09 inspection rating results, 38 per cent of the ratings im-

proved, 36 per cent of the ratings remained the same, and 26 per cent received lower ratings.

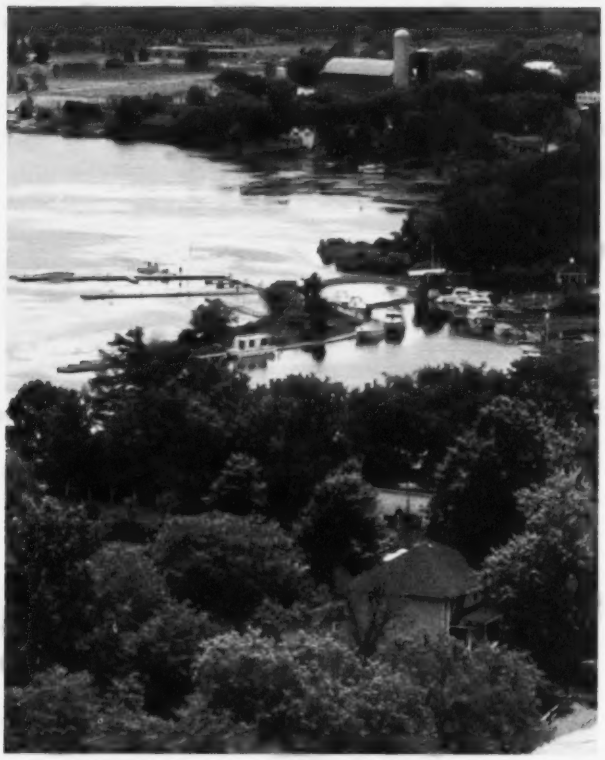
Whenever ministry inspectors find non-compliance issues, they use a range of compliance tools to help municipal owners and operators resolve the issues effectively.

Visit the Drinking Water Quality page of the Drinking Water Ontario website for the list of municipal residential drinking water systems in Ontario, their locations, 2009-10 inspection ratings and the percentage of their drinking water quality tests that met the provincial standards.

CHART 10: Distribution of Municipal Residential Drinking Water System Inspection Ratings in 2005-06, 2006-07, 2007-08, 2008-09 and 2009-10



TOP AREAS FOR IMPROVEMENT — MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEMS



The ministry analyses the inspection program results to identify trends in non-compliance and any issues that require special attention. During 2009-10, the following were identified as areas in which the systems could make improvements:

- Operating treatment equipment
- Having up-to-date operation and maintenance manuals
- Operating chlorination equipment, and
- Following proper procedures with regards to verbal notifications of adverse water quality incidents

The ministry continues to work with drinking water systems to ensure a better understanding of their responsibilities in these four areas. Drinking water training and outreach programs are also adjusted to help address non-compliance issues.

DEFICIENCIES, ORDERS AND ORDER RESOLUTIONS — MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEMS

Deficiencies

A deficiency is defined as a violation of specified provisions of the Safe Drinking Water Act or its regulations, if the violation is deemed to pose a drinking water health hazard. The ministry is required to take mandatory action within 14 days of discovering a deficiency at a municipal residential drinking water system. One example of a deficiency would be water treatment equipment that is not operating according to provincial standards.

One system was found to have deficiencies in 2009-10 related to monitoring, reporting and disinfection.

Orders and Order Resolution

Orders are one of the compliance tools inspectors may use to resolve non-compliance issues. The 693 inspections conducted in 2009-10 led to six contravention orders being issued to six municipal residential drinking water systems, or 0.9 per cent of the total, as shown in Table 8. In addition, two non-inspection preventative orders were issued to two municipal residential systems based on events or issues that occurred at these systems.

Details of the eight orders issued are published separately and are available on the Drinking Water Ontario website.

Out of the eight orders issued in 2009-10, five systems have complied with the order requirements. The other three systems continue to work towards complying with the provincial regulations.

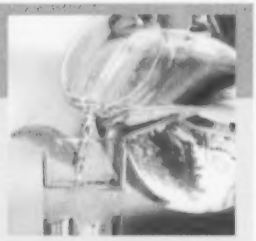
For orders issued in 2008-09, one system continues to work towards compliance.

Table 8: Municipal Residential Drinking Water Systems that Received Orders in 2009-10, 2008-09, 2007-08, 2006-07, 2005-06 and 2004-05

	2009-10	2008-09	2007-08	2006-07	2005-06	2004-05
Systems with Inspection-Related Orders						
Total Number of Municipal Residential Drinking Water Systems with Inspection-Related Orders	6	18[1]	11	20[2]	43[3]	77
Total Number of Inspections of Municipal Residential Drinking Water Systems	693	700	699	712	709	729
Percentage of Municipal Residential Drinking Water Systems that were Inspected and Received Orders	0.9%	2.6%	1.6%	2.8%	6.1%	10.6%
Systems with Non-Inspection-Related Orders[4]	2	4	3	-	-	-
Total Number of Orders Issued to Municipal Residential Drinking Water Systems (Inspection and Non-Inspection)	**8**	**25**	**14**	**23**	**39[5]**	**77**

[1]Three municipal residential drinking water systems were issued preventative orders during an inspection.
[2]Four municipal residential drinking water systems were issued preventative orders.
[3]12 municipal residential drinking water systems were issued preventative orders.
[4] Non-inspection-related orders were issued as a result of an event or issue at a drinking water system that occurred outside of the inspection timeframe.
[5]Two orders were issued to more than one system.

DRINKING WATER FACTS



Ensuring Accountability — Meeting the Requirements of the Compliance and Enforcement Regulation

During 2009-10, the Ministry of the Environment fulfilled its responsibilities under the Compliance and Enforcement Regulation (O. Reg. 242/05 under the Safe Drinking Water Act) with respect to inspecting municipal residential drinking water systems and laboratories licensed or eligible to perform drinking water testing.

Municipal Residential Drinking Water Systems

Ministry actions included:

- Inspecting all 693 municipal residential drinking water systems in the province.
- Ensuring that at least one out of every three inspections of a municipal residential drinking water system was unannounced (in 2009-10, 236 of the 693 inspections were unannounced).
- Sending inspection reports to appropriate authorities within 45 days of completing the inspection.
- Responding as required to adverse water quality test reports or other reported problems.
- Taking mandatory action within 14 days of finding a deficiency at a municipal residential drinking water system (or taking immediate action in cases where a drinking water health hazard is present).

Laboratories Licensed or Eligible to Perform Drinking Water Testing

Ministry actions included:

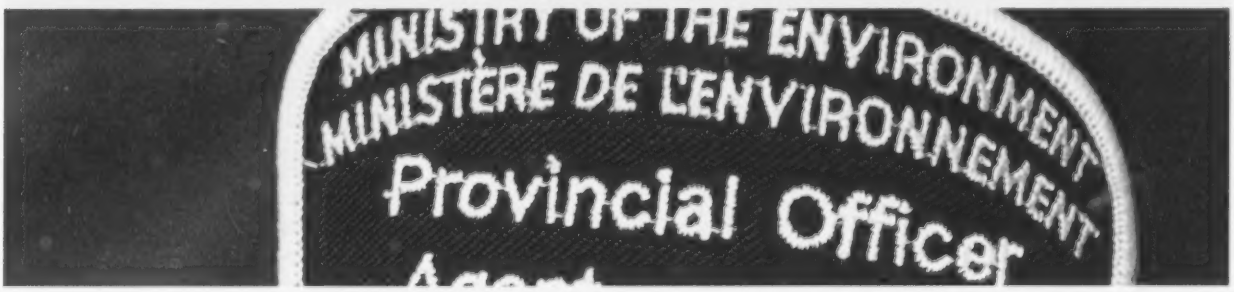
- Inspecting all 52 licensed laboratories.
- Completing 104 inspections at licensed laboratories, including 52 unannounced laboratory inspections and 52 announced inspections (regulations require that laboratories are inspected at least twice annually with at least one inspection being unannounced). The ministry also completed one unannounced inspection at an eligible laboratory and two announced pre-licensing inspections.

Providing all laboratories with an inspection report within 45 days of the completion of the inspection.

- Taking mandatory action within 14 days of finding an infraction at a licensed and eligible laboratory (or taking immediate action in cases where a drinking water health hazard is present).

Request for Drinking Water Investigation

The Compliance and Enforcement Regulation enables any member of the public to request an investigation if they have reason to believe that the act, its regulations or instruments are being violated. There were no such requests from the public in 2009-10.



INSPECTION PROGRAM RESULTS FOR LOCAL SERVICES BOARDS

Some northern Ontario communities are managed by local services boards. The drinking water systems operated by the boards fall under the category of non-municipal year-round residential drinking water systems because they are not owned and operated by a municipality.

During 2009-10, the ministry inspected eight drinking water systems operated by local services boards. No orders were issued with respect to these systems.

One local services board owner who received orders in 2005-06 and 2006-07 continues to work with the ministry to provide safe drinking water for its residents. This local services board received funding under the Building Canada Fund in February 2009 and is currently in the process of constructing and installing a treatment system designed to meet disinfection requirements.

INSPECTION RESULTS FOR NON-MUNICIPAL YEAR-ROUND RESIDENTIAL DRINKING WATER SYSTEMS AND SYSTEMS SERVING DESIGNATED FACILITIES

The ministry conducts proactive, risk-based inspections of non-municipal year-round residential drinking water systems and systems serving designated facilities. When determining which systems to inspect, the ministry considers several factors such as the history of compliance and adverse water quality incidents, and referrals from local public health units.

The ministry works with the owners and operators of the drinking water systems throughout the year to help them achieve and maintain compliance. Ongoing collaborative work between the ministry and our drinking water partners is an important component of Ontario's drinking water safety net.

In 2009-10, the ministry conducted 483 proactive inspections of these systems, up from 259 in 2008-09.

For 2009-10, a total of 59 orders were issued to 57 systems: 38 orders were issued to 36 non-municipal year-round residential drinking water systems and 21 orders were issued to 21 systems serving designated facilities.

INSPECTION PROGRAM RESULTS FOR SCHOOLS AND DAY NURSERIES

In 2009-10, the ministry inspected 1,387 of the 11,024 (12.6 per cent) schools and day nurseries under O. Reg. 243/07 (Schools, Private Schools and Day Nurseries). During the 2009-10 inspections, two orders were issued, representing 0.14 per cent of inspected schools and day nurseries. One of these facilities has complied with the order requirements, and the other one has ceased operations.

In 2008-09, five orders were issued and three were complied with. Of the two remaining orders, one facility has since complied with the order requirements, and the other one has ceased operations.

Table 9 provides a summary of the inspections and orders issued for 2009-10 and 2008-09.

Table 9: Number of O. Reg. 243/07 Schools and Day Nurseries Receiving Inspection-Related Orders in 2009-10 and 2008-09

	2009-10	2008-09
Total Number of Schools and Day Nurseries that Received Orders	2	5
Total Number of Inspections of Schools and Day Nurseries	1,387	1,009
Percentage of Schools and Day Nurseries that were Inspected and Received Orders	0.14%	0.50%

2009-10 SMALL DRINKING WATER SYSTEMS PROGRAM RESULTS

RISK ASSESSMENT PROGRESS

Oversight for small drinking water systems was transferred to the Ministry of Health and Long-Term Care from the Ministry of the Environment effective December 1, 2008. Public health inspectors from the local public health units are responsible for conducting individual site-specific risk assessments of the approximately 18,000 small drinking water systems in the province.

The site-specific risk assessment process involves visiting the small drinking water system location to assess the source of drinking water, identifying risks that may affect the quality of the water and developing strategies to monitor and maintain safe drinking water. The inspector completes the risk assessment by using an electronic risk categorization tool, conducting visual inspections of the water source, system equipment and components, reviewing documentation relating to system water testing and reviewing historical sampling results.

At the end of the process, the inspector is able to determine a risk category of high, moderate or low for the small drinking water system and develop specific legal requirements that must be implemented by the owner and/or operator to manage the water supply safely. The requirements are provided to the owner and/or operator through a legally binding directive that applies to the small drinking water system. Requirements that may be included in the directive are: the frequency and sampling locations for water sampling by the owner and/or operator, water treatment requirements, operational checks, and owner and/or operator training.

During the reporting period from April 1, 2009 to March 31, 2010, progress on the small drinking water system program implementation was as follows:

- 2,074 site-specific risk assessments were completed
- 896 site-specific risk assessments were in progress

Building on these 2,970 assessments, the inspectors continue to perform risk assessments and are on track to have 100 per cent either finalized or in progress by December 31, 2011.

REPORTING OF ADVERSE WATER QUALITY INCIDENTS

An adverse water quality incident generally occurs when a test result of a drinking water sample exceeds the maximum allowable concentration set out in the Ontario Drinking Water Standards Regulation. Small drinking water systems are required to sample their supplies for the presence of indicator bacteria (total coliform and *E. coli*) at a frequency outlined in the directive. When the incidents are identified, system owners and/or operators work closely with public health inspectors to identify and resolve the causes to protect drinking water users from potential illness.

As site-specific risk assessments and testing activities increased, the number of adverse water quality incidents also increased. In the reporting period of April 1, 2009 to March 31, 2010, a total of 1,202 adverse water quality incidents were reported to the Ministry of Health and Long-Term Care and to the local boards of health under O. Reg. 318/08 and O. Reg. 319/08, under the Health Protection and Promotion Act.

RECOGNIZING EXCELLENCE

Sharing Successes: Renfrew County & District Health Unit's Small Drinking Water Systems Program Implementation

When it came time to implement the Ministry of Health and Long-Term Care's O. Reg. 319/08 (Small Drinking Water Systems) under the Health Protection and Promotion Act, Renfrew County & District Health Unit — one of the largest organized counties in the province — took a different approach.

Given the vast scope and geographic area that encompasses the region, Bob Schreader, Acting Manager of Environmental Health, and Mike Grace, Coordinator of Environmental Health, decided that all of their inspectors would be trained in conducting the small drinking water systems risk assessments, as opposed to training one or two representatives, a common approach in other jurisdictions. Bob explains, "We wanted to ensure that each inspector was trained and confident in performing a risk assessment on a water system. Mike then accompanied each inspector on their first risk assessment to ensure proper procedures were executed."

The county also held a series of information sessions in the region to explain the new legislation, cover off what was required of the operator and explain what the health unit staff would be doing over the coming months with each system. As Mike puts it, "These meetings were a great chance for us to dispel many of the myths and misinformation around Regulation 319/08."

Bob is quick to point out that their Small Drinking Water Systems Program is ongoing. "While the initial implementation is complete", he notes, "we are still carrying out some risk assessments and, in future, will need to follow-up with individuals to ensure that any directives given out to operators are acted upon in a timely manner."

Education, thorough communication and consistent action by staff are all key factors in the successful implementation of the Small Drinking Water Systems Program in Renfrew County.

2009-10 LABORATORY LICENSING & COMPLIANCE PROGRAM RESULTS

All laboratories that are licensed or eligible to test drinking water must be inspected to ensure they are operating in compliance with provincial regulations. The ministry's Laboratory Licensing & Compliance Program encompasses both announced and unannounced inspections. Laboratories are inspected twice annually with at least one of the inspections being unannounced.

Inspections may include an assessment of several areas such as: sample handling, testing methods, reporting of adverse water quality incidents, accreditation requirements, management practices and facilities and resources.

The ministry is required to provide the laboratory with a report within 45 days of completion of the inspection. The report identifies problem areas and non-compliance issues, and provides guidance on how to address these areas and issues. Laboratories must take action within 14 days of receiving their reports if the inspector identified a regulatory infraction. If the infraction represents a drinking water-related health hazard, mandatory action must be taken immediately.

INSPECTIONS AND ORDERS

In 2009-10, all 52 licensed laboratories were inspected twice, for a total of 104 inspections. Of the 104 inspections, 52 were announced and 52 were unannounced. In addition, one unannounced inspection of an eligible laboratory located outside of Ontario was conducted, and two pre-licensing inspections of two non-licensed laboratories were conducted.

Table 10 provides a summary of the laboratory inspections completed over the past six years, broken down by the type of inspection.

Table 10: Summary of Laboratory Inspections in 2009-10, 2008-09, 2007-08, 2006-07, 2005-06 and 2004-05

Inspection Type	Licensed and Eligible Laboratory Inspections Completed					
	2009-10	2008-09	2007-08	2006-07	2005-06	2004-05
Announced	52	52	56	59	1	57
Unannounced	53[2]	52	53[1]	57	113	60
Other	2[3]					
Total	**107**	**104**	**109**	**116**	**114**	**117**
Number of Laboratories (Licensed and Eligible)	53	52	56	57	57	58[3]

[1]During 2007-08, three laboratories voluntarily withdrew from the licensing program between their announced and unannounced inspections.
[2]During 2009-10, one laboratory voluntarily withdrew and two laboratories joined the laboratory licensing program. This included one laboratory which appears on the Director's Eligibility List for Out-of-Province Laboratories.
[3]Other inspections included laboratory pre-licensing or relocation inspections.

In 2009-10, three orders were issued to three laboratories licensed to perform drinking water testing, representing 2.9 per cent of licensed laboratories, as shown in **Table 11**. One order was issued to a non-licensed laboratory. Details of orders issued to laboratories are published separately and are available on the Drinking Water Ontario website.

Table 11: Licensed and Unlicensed Laboratories that Received Inspection- and Non-Inspection- Related Orders in 2009-10 and 2008-09

	2009-10	2008-09
Licensed Laboratories with Inspection-Related Orders		
Number of Licensed Laboratories that Received Orders	3	2
Number of Planned Inspections of Licensed Laboratories	104	104
Percentage of Licensed Laboratories that were Inspected and Received Orders	2.9%	1.9%
Unlicensed Laboratories with Non-Inspection-Related Orders	1	1
Total Number of Orders Issued to Licensed and Unlicensed Laboratories (Inspection and Non-Inspection)	**4**	**3**

TOP AREAS FOR IMPROVEMENT — LICENSED AND ELIGIBLE LABORATORIES

The ministry's inspection program of licensed and eligible laboratories for 2009-10 identified three common areas for improvement:

- Having a policy to ensure that all documentation and records relating to drinking water testing are kept for five years.
- Retaining records for calculations of drinking water tests.
- Having procedures in place to ensure drinking water results reported to the ministry and the client are the same.

The ministry continues to work with licensed and eligible laboratory owners to ensure a better understanding of their responsibilities in these three areas.

Operator Certification and Training

Ontario's certification and training requirements for operators are among the most stringent in North America. As of March 31, 2010, there were 6,213 certified drinking water operators in Ontario holding 8,502 certificates.

A large number of operators will be eligible to retire over the next five to 10 years. With this in mind, the ministry is working with its partners to help promote careers in the water and wastewater industry

2009-10 Convictions

Inspectors report potentially serious violations of Ontario's environmental protection laws, including the Safe Drinking Water Act, to the ministry's Investigations and Enforcement Branch. When necessary, the branch conducts investigations and recommends whether or not to lay charges. If laying charges is recommended, a Crown Attorney reviews the evidence, assesses the benefits to the public of pursuing a conviction, evaluates the likelihood of securing a conviction and decides if charges will be laid.

During 2009-10, there were eight cases involving convictions related to ten drinking water systems and licensed laboratories. The cases with convictions resulted in fines totalling $46,750, as shown in **Table 12**. Details of convictions issued to systems and licensed laboratories are published separately and are available on the Drinking Water Ontario website.

Table 12: Summary of 2009-10 Convictions for Drinking Water Prosecutions by Facility Type

Facility Type	2009-10 Total Cases with Convictions	Number of Systems or Laboratories	2009-10 Fines
Municipal Residential Drinking Water Systems[1]	3	3	$3,750
Non-Municipal Year-Round Residential Systems[2]	1	1	$1,000
Systems Serving Designated Facilities	2	3	$22,000
Schools and Day Nurseries	1	1	$2,500
Licensed Laboratories	1	2	$17,500
Total	**8**	**10**	**$46,750**

[1]In 2009-10, three individuals and one corporation were convicted and fined $3,750 for charges related to drinking water offences at three municipal drinking water systems.
[2]In 2009-10, one individual was convicted and fined $1,000 for charges related to drinking water offences at a non-municipal year-round drinking water system.

Closing Statement

Each year we continue to move forward on implementing key drinking water initiatives. This coming year will bring further advancements in the area of new clean water technologies with the recent passing of the Water Opportunities and Water Conservation Act. The act supports the growth and expansion of Ontario's clean water technology sector.

This year, source protection committees will continue to work on drafting source protection plans. All remaining municipalities will become fully licensed, making Ontario the first jurisdiction in North America to have mandatory quality management systems for all regulated drinking water systems.

We look forward to working in partnership with these groups and many others to further strengthen our drinking water safety net, and continuing to help ensure that Ontarians enjoy safe, clean drinking water.

Please let us know what you think of this report as well as any ideas you might have for future editions. You can reach my office by email at drinking.water@ontario.ca.

Glossary

B	
Backwash Wastewater System:	a system that treats the concentrated solution of suspended matter produced when a filter is subject to flow reversal. The treatment consists primarily of solids separation and disposal.
C	
Clearwell:	the final tank or chamber in a water treatment plant; the chamber through which water flows over a controlled period of time with exposure to controlled levels of chemical disinfectant prior to being pumped into the distribution system.
Contravention Order:	the purpose of a Contravention Provincial Officers Order is to address a contravention of an Act, Regulation, order, notice, direction, requirement or report or a term or condition of an approval/permit. Contravention orders can be issued to persons who are either currently contravening or have in the past contravened an Act, Regulation, order, notice, direction, requirement or report or a term or condition of an approval/permit. A contravention order may require the ordered party to comply with any directions set out in the order within the time specified.
Contaminant:	any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect.
Corrective Action:	steps that must be taken following an adverse water quality incident as specified by O. Reg. 170/03, Schedules 17 & 18, directed by the local medical officer of health or drinking water inspector, that are necessary to protect human health.
D	
Disinfection:	the destruction or inactivation of pathogenic and other kinds of microorganisms by physical or chemical means.
Drinking Water Systems Serving Designated Facilities:	drinking water systems serving, for example, children's camps, daycare centres, schools or health care facilities. These systems fall under the five categories of non-residential and seasonal residential systems defined in O. Reg. 170/03. They are large municipal non-residential, small municipal non-residential, large non-municipal non-residential, small non-municipal non-residential and non-municipal seasonal residential categories of drinking water systems.
E	
E. coli (Escherichia coli):	a species of bacteria naturally present in the intestines of humans and animals. If animal or human waste containing *E. coli* contaminates drinking water it may cause gastrointestinal disease in humans. Most types of *E. coli* are harmless, but some active strains, especially O157:H7, produce harmful toxins and can cause severe illness.
Eligible Laboratory:	a laboratory located outside Ontario that is eligible to conduct analysis on drinking water samples from Ontario for specific tests and which appears on the Director's Eligibility List for Out-of-Province Laboratories.
F	
Filtration:	the separation of suspended solid particles from a fluid stream by passage of the fluid through a granular or membrane filter medium that retains most of the solids on or within itself.
H	
High Lift Pump:	pumping equipment that draws from the clearwell and discharges to the distribution system.

L	
Low Lift Pump:	pumping equipment that draws from the plant intake and discharges to the first stages of treatment.
M	
Microbiological Organism:	an organism so small that it cannot be seen without a microscope, including bacteria, protozoa, fungi, viruses and algae.
Membrane Microfiltration:	a pressure driven process in which water is filtered through a microfilter (e.g. membrane), an engineered material that acts as a barrier with a nominal pore size on the order of 1/10th a micrometer to several micrometers.
Membrane Train:	a group of membranes which at any one time are performing the same function (e.g. filtering, backwashing, testing or cleaning).
Municipal residential drinking water systems:	drinking water systems or part of a drinking water system that serve six or more private residences that meet the definition of municipal drinking water system. Includes the categories of large municipal residential and small municipal residential drinking water systems under O. Reg. 170/03.
N	
Non-municipal year-round residential drinking water systems:	a non-municipal drinking water system (other than a seasonal residential system) that serves a major residential development (six or more private residences) or a trailer park or campground with more than five service connections. These systems are a single category defined in O. Reg. 170/03.
O	
Organism:	an individual form of life that includes bacteria, protozoa, fungi, viruses and algae.
P	
Preventative Order:	an order issued by a Provincial Officer where considered necessary for the purposes of the Safe Drinking Water Act (which include protecting human health and preventing drinking water health hazards), even where no contravention has occurred yet. A Preventative Measures Order is used to prevent possible future adverse effects.
S	
Source Water:	untreated water in streams, rivers, lakes or underground aquifers which is used for the supply of raw water for drinking water systems.
T	
Total Coliform Bacteria:	a group of waterborne bacteria consisting of three main groups with common characteristics that is used as an indicator of water quality. The presence of total coliform bacteria in water leaving a treatment plant or in any treated water immediately after treatment could indicate inadequate treatment and possible water contamination.
Turbidity:	a visible haze or cloudiness in water caused by the presence of suspended matter, resulting in the scattering and absorption of light. The cloudier the water, the greater the turbidity.
W	
Watershed:	a region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water.

List of Figures, Charts and Tables

FIGURES

CHARTS

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For More Information:

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